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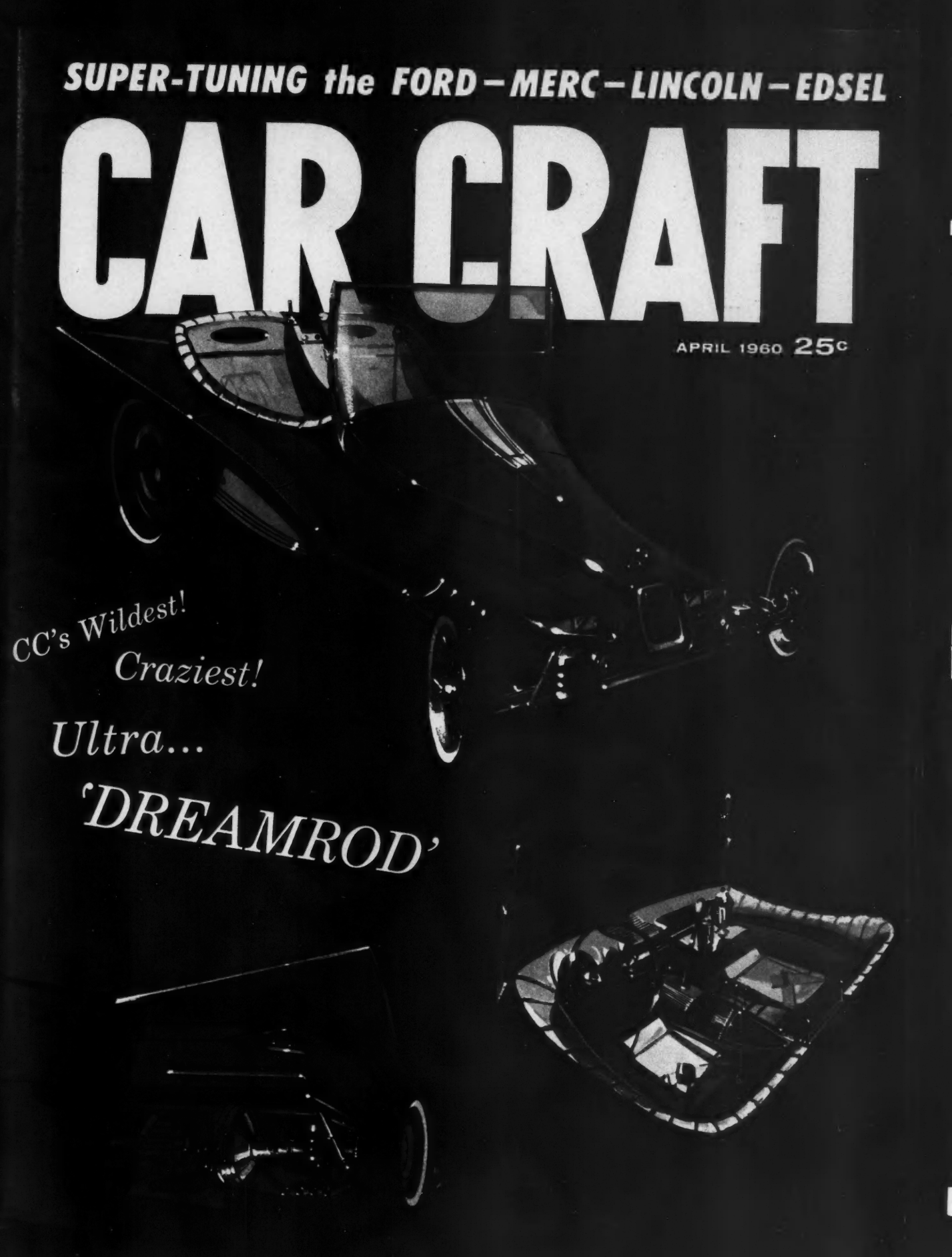
CAR CRAFT

APRIL 1960 25c



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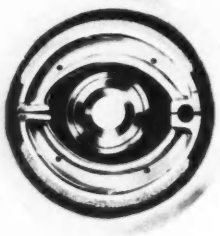
MARK I
Challenger Racer
Qualified for Class "A" Competition
$189.00

HERE'S WHY . . .

These superb racing Karts were designed by Bill Muller, former Indianapolis race driver and racing engineer, to provide (AS STANDARD EQUIPMENT) everything you need to win in top competition. These Challenger Racers offer 25 advantages, the combination of which is not found on any other Racing Kart in the world. Two of these advantages, brakes and steering mechanism, are exclusive with the Challengers and are considered by leading racing engineers to be the ultimate in Kart braking and control. Challenger Racers come equipped with a choice of Clinton or Lauson engines but are available with other leading make engines or without engines if you choose.

HERE'S WHY . . .



The Challenger brakes are two-shoe automotive internal expanding brakes. Their braking efficiency at racing speeds is proving to be one of the big plus factors in winning races. They permit the driver when approaching a curve to maintain top speed longer than Karts with other type systems which must start to brake much sooner.

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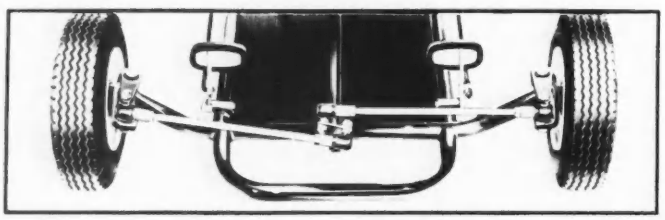
The absolute perfection of the Challenger Racers *Steering mechanism cannot be improved. It represents the ultimate in Racing Kart steering and provides a precise turning radius which completely eliminates tire scrubbing and frictional speed losses on curves.
*Patent applied for.



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Standard Retail Price	$189.00	$269.00
INCLUDES:		
Completely assembled ready to race	Yes	
Crated	Yes	
Freight Paid	Yes	
Chassis completely welded	Yes	
Painted—Baked enamel. Black or Red	Yes	
TYPE BRAKES:		
Finest automotive two shoe Internal expanding brakes	Yes	
Internal Band Brakes	No	
External Spot Brakes	No	
Scrub on tire brakes	No	
STEERING:		
Diameter-king pin	½"	
Air craft type fittings	Yes	
Shake proof fasteners	Yes	
Precise turning radii	Yes	
ENGINE: Choice of		
Clinton 2 cycle 2½ H.P.	Yes	
Lawson 4 cycle 2½ H.P.	Yes	
OTHER FEATURES:		
Wheel size	5"	
Tapered roller bearings	Yes	
Fully pneumatic tires	Yes	
Hub caps (keep out dirt)	Yes	
Foot brake pedal	Yes	
Foot accelerator pedal	Yes	
Replaceable axles	Yes	
Dry air filter	Yes	
Rewind starter	Yes	
All chain drive	Yes	
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Automatic clutch	Yes	
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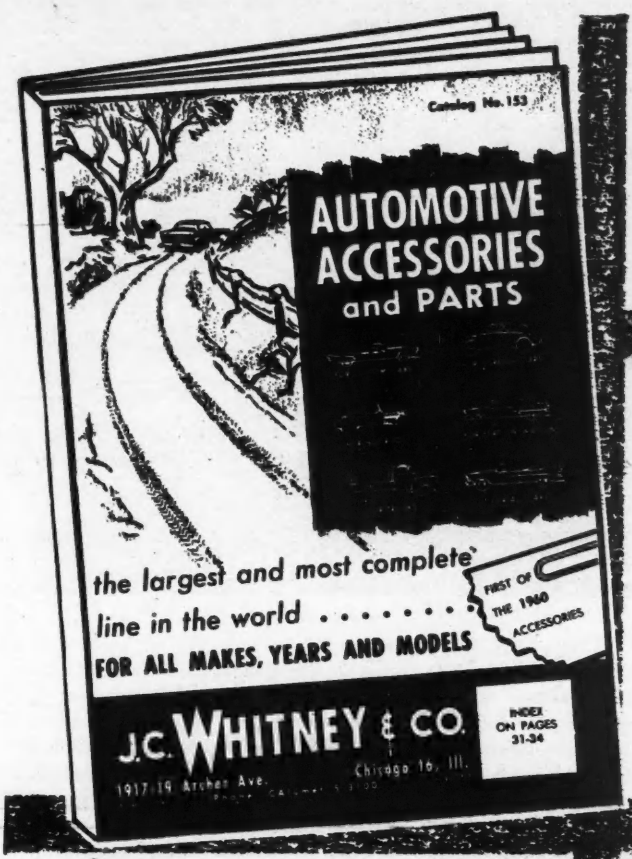
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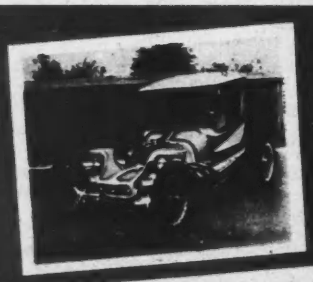

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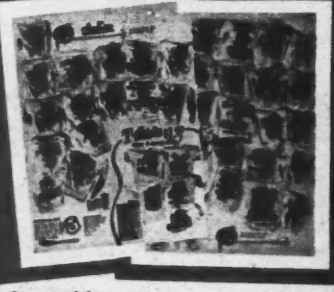

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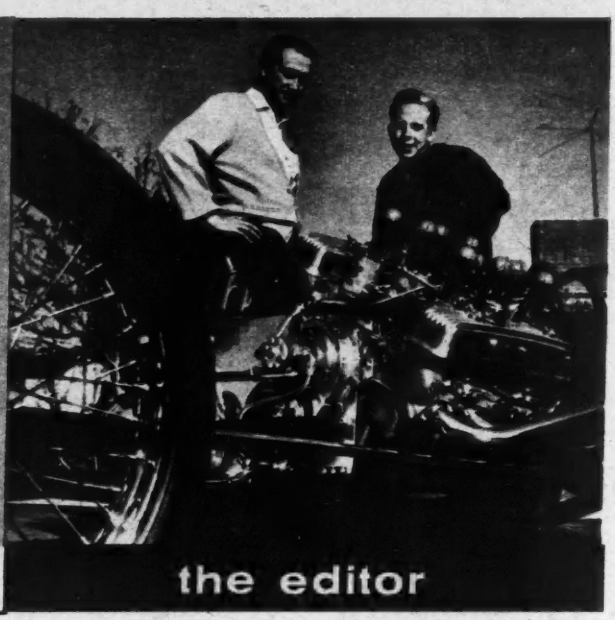
SPEAKING of the editor



ONE QUICK GLANCE around the drags these days and one can see a lot of interest regarding the swing to multiple engine cars. This experimental transition is indeed a controversial one. Mention any more than one-engine dragsters to most builders or self-styled authorities and you are met with mixed emotions and technical bewilderment. "Two engines, why that means additional weight, complex engine synchronization, traction problems, handling, can't be anything but double-trouble, doesn't show me a thing!" Everyone is deserving of their own opinion—we have ours. Let me introduce you to the young man above on my left, Tommy Ivo. Tom is just one of several car owners and builders who have swung to two-engine gas rails. First, let's understand that these multiple engine cars are strictly in experimental stages. They are far removed from the highly refined, ultimately engineered single engine dragsters that currently hold title to drag racing's official records. Even in their so-called trial capacity they are rapidly approaching record speeds and elapsed times established by single engine 'fuel' dragsters. The big difference is that they are performing on *gas*. A few short weeks ago Ivo toured the LADS drag strip in Long Beach, California, with his twin Buick engine dragster tripping the clock with a speed of 163.63 mph. Respectable time? You bet. Elapsed time? *Nine flat!* The two un-blown Buick powerplants that repose in the sleek chassis could still be modified for additional horsepower if Ivo preferred the 'fuel' classification. The car has yet to give its maximum performance. When speaking of high speeds, other multiple engine cars have posted faster times, but the combination of Ivo's speed and elapsed time is indicative of the un-tapped potential regarding multiple engines when applied to drag racing. In short, Tom's dragster and others similar are on the verge of re-writing drag racing's official record book. Next month you will get a closer look at these cars and the engineering and rodding ingredients behind them. CAR CRAFT's Technical Editor, Don Francisco, has been on assignment for approximately the last three months scrutinizing and noting construction, engineering, and even human errors that these builders and handlers have had to challenge and overcome. The all important torque-to-traction problems, weight distribution, chassis designs, power-to-weight limitations, and synchronization of engines, will all have the floor of discussion concerning theory and practical experience. There are many drag enthusiasts who are, or are about to, make the leap to multiple engine drag racing. If you're one of them you'll undoubtedly find many of the answers in Don's report in the May issue. We feel that if the two-hundred-miles-per-hour quarter-mile drag racing barrier is reserved for anybody—it's waiting for a multiple engine car.

— Dick Day

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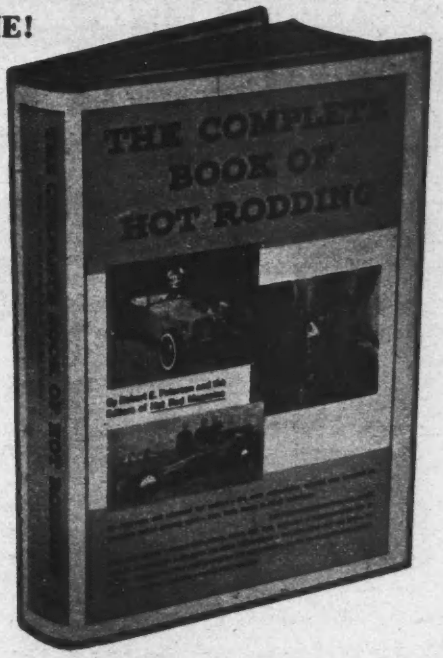

"COMPLETE" is truly the word to describe this amazing book. For beginners and seasoned hot rodders, from basic theory to the latest in techniques, THE COMPLETE BOOK OF HOT RODDING covers the entire field in detail. Authored by automotive magazine publisher Robert E. Petersen and the editors of HOT ROD Magazine, this master reference is certain to provide you with scores of ideas YOU CAN USE.

● **THE HOT ROD STORY** — Learn how the sport of hot rodding actually began. Here is the history of its development, the obstacles which blocked its growth. This informative section also discusses the rise of organized hot rod activities, spearheaded by groups like the National Hot Rod Association. Especially interesting are stories of the early drag racing meets.

● **HOT RODDERS TACKLE THE WORLD'S ENGINES** — How veteran hot rod enthusiasts get more power. Covers such basics as the four stroke engine cycle, cylinders, pistons, crankshafts, connecting rods, valves, camshafts and other engine fundamentals. The formula for increasing performance is also given and analyzed step-by-step. This chapter provides an invaluable checklist of primary facts.

● **THE TRUE FACTS ABOUT HORSEPOWER** — Torque and horsepower are ratings of the performance ability of engines and, therefore, of relative acceleration and speed capabilities of the cars in which they are installed. The average hot rodder uses the terms "torque and horsepower constantly, yet is often unable to define them. In this chapter, you will learn how they're determined, applied to your car.

● **GETTING MORE HORSEPOWER FROM YOUR ENGINE** — Facts about boring and stroking (how to stroke a crank by the welding method, methods of production, stroker pistons and kits), porting — removing material from the walls of the intake and exhaust ports and passages, oversize valves, reground camshafts, valve springs (which strongly influence the way an engine runs), carburetion and the exhaust system.

● **YOUR ENGINE'S VALVES** — None of the internal parts in a high-performance engine have an easy job, but it's doubtful if any of them work harder or under more difficult conditions than the valves. Here's how to disassemble, inspect, recondition, adjust. Full information on servicing valves for better breathing by improving the adverse conditions under which they operate.

● **THE COMPLETE STORY OF ENGINE CARBURETION** — How to insure your engine's idling well and running smoothly with good torque output at low engine speeds. Single, dual, triple, quad carburetors. The problems of progressive linkage. Maintenance and service for better starting, acceleration and economy. Also discusses special fuel pressure tanks, which give non-pulsating fuel flow.

● **YOUR ENGINE'S ELECTRICAL SYSTEM** — High-performance ignition, magnetos, distributors, coils, condensers, spark plugs, batteries, generators, regulators. How to get better performance through ignition conversions. Covers the various functions of the electrical system, with major emphasis on the job performed by the ignition system of firing the mixture in the cylinders at high pressure and RPM.

● **ENGINE BALANCING** — One of the most important steps in any engine rebuilding job is the complete rebalancing of the rotating and reciprocating parts of the engine's crankshaft and rod and piston assemblies. Here's how hot rodders who want top high performance go about putting the rotating parts of their engines in perfect balance. The step-by-step procedures as done by the experts.

● **FACTS ON HIGHER COMPRESSION** — One of an engine's most important features is its compression ratio, which has a definite influence on the torque and power an engine can develop. This section shows you how to get better performance through higher compression ratios. Of particular interest to hot rodders is the authoritative information given on high octane fuels.

● **THE PROS AND CONS OF FUEL INJECTION** — The latest developments in the field of fuel injection systems. Power and economy aspects versus carburetor-type fuel systems. The two basic types of passenger car fuel injection systems under present development — constant-flow and timed injection. Includes the comprehensive report of General Motors engineers on their work on the GM-Rochester fuel injector.

● **SUPERCHARGING FOR INCREASED PERFORMANCE** — Supercharging is a method of hopping-up an engine by providing a mechanical means to force greater quantities of fuel and air mixture into the engine's cylinders than the cylinders can induct normally. This chapter attempts to answer the question, "How much more power can you expect from supercharging?" Also discusses superchargers available.

● **ENGINE SWAPPING FOR MORE POWER** — Savings in time and money can be made by installing a bigger engine. But there are problems, including proper mounting and transmission hook-up. Given here are methods of installation which will help you surmount these difficulties. Swaps include stuffing a '54 Cadillac Eldorado engine into a coupe built from '32-'34 Ford components, also Olds V8s in '49-'53 Fords.

● **CHOOSING THE RIGHT TRANSMISSION** — Discusses transmissions for the various types of cars used by hot rodders: a passenger car used only for normal driving, a passenger car used for normal driving and drag racing, a passenger car used strictly for drag racing, a competition car used strictly for drag racing, a competition car used strictly for straightaway competition, etc.

● **BUILDING YOUR OWN HOT ROD** — Choosing the basic car. Chassis, body, suspension modifications. Building for street or competition, or both. Examples of some of the best: Lincoln-powered roadster with 1929 Ford Model A body; '32 Ford with '55 Chevy V8 engine; the Glass Slipper, world record-holding Class C (183 to 305 cubic inches) dragster; Masters Dragliner.

● **THE ABC'S OF TROUBLE SHOOTING** — Every engine malfunction problem is discussed in easy-to-understand detail: ignition system, battery and cables, ignition wiring, ignition distributor shaft, distributor cap and rotor, coil tower, coil lead, ignition distributor primary circuit, breaker points, ignition condenser primary circuit wiring, distributor "pigtail" lead, distributor primary terminal, etc.

● **RACING TIRE PROBLEMS** — How to figure the proper width and diameter of a racing "slick" in relation to horsepower. How to get the best traction; the most service; the most safety. The five "musts" of big-time competition: correct tread design; correct outside diameter in relationship to the gear ratio and engine rpm; correct air pressure; correct balance and weight; correct maintenance.

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features

14 SUPER-TUNING THE FORD-MERC-EDSEL-LINCOLN
Carburetion and ignition tips for increasing horsepower

20 DEUCES ARE WILD
Here's a pair of New England's finest

22 PERSONABLE PICKUP
A clean-line pickup that was restyled the right way

24 KARTING — BRITISH STYLE
Cog-swapping and hot handling turn English karts into racers

28 BRANDY'S CHARIOT
Name the latest trends in customizing and this coupe has them

32 "DREAM-ROD" 1960
An artist's conception of the wildest roadster of the future..

38 TAILOR-MADE-THIRTY-FOUR
An unusual roadster that started as a sedan

40 JUST FOR KICKS
A Crosley-powered miniature "T" — built for Bonneville

42 HERE'S HOW:
Taillight lenses on hubcaps — a novel gimmick for wheel covers

44 SPROCKETS
New designs offer quick and varied gear selection

46 FASHIONED WITH FINS
Oldsmobile convertible was created with new look in mind

48 HOPPING UP THE TWO-STROKE
Competition demands the utmost from engines — here's how to get it

52 BELLEVILLE BELLE
A sweet rod-pickup from the land of Lincoln

56 SHAPELY CHEVY
Metal sculpturing paid off on this '55 from Oregon

departments

8 CC SHOPS
12 WHAT'S YOUR PROBLEM?
54 ¼ — ½ MIDGET BULLETIN BOARD
62 CUSTOM QUERIES
64 LETTERS

cover

This month's cover is a complete switch for our magazine. The fantastic rendering by Larry Evans depicts the "Dream-Rod" of the future — and it may not be too far off. See page 32 for full info.

1960 '3 Big Changes

The industry's foremost changes find Luther Engineering Design Dept. out in front for 1960.

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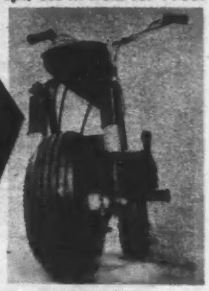

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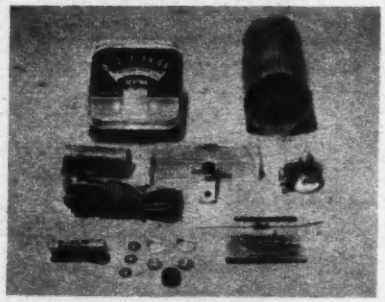

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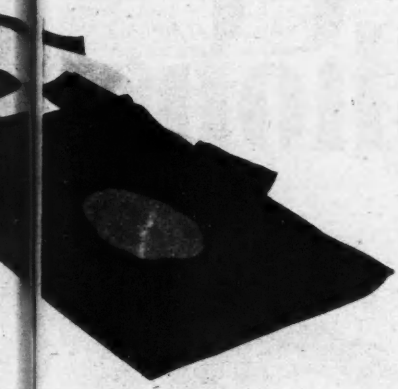

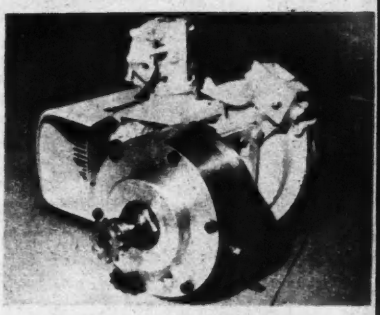

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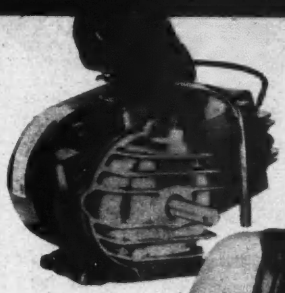

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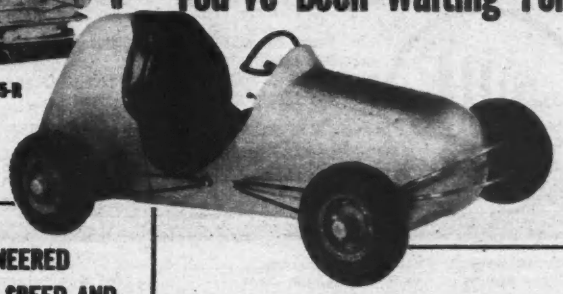

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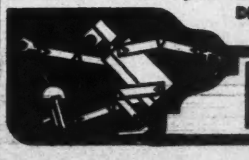

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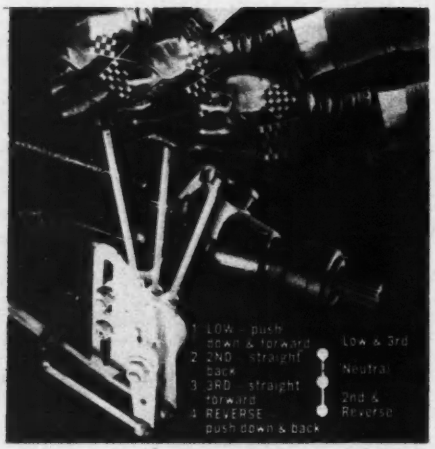

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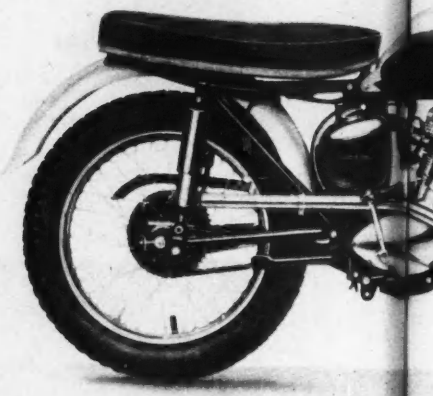

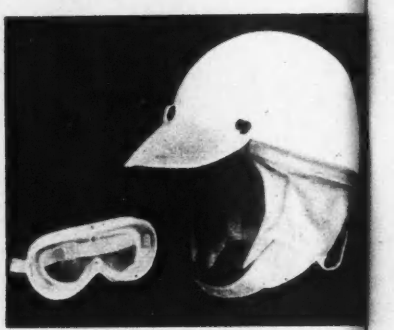

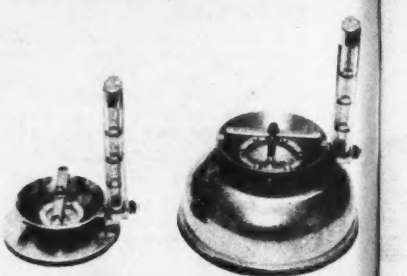

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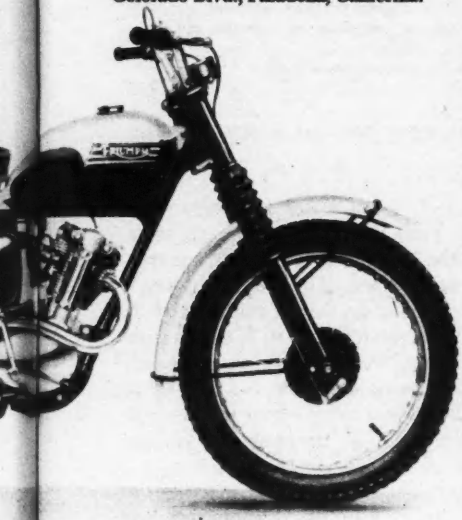

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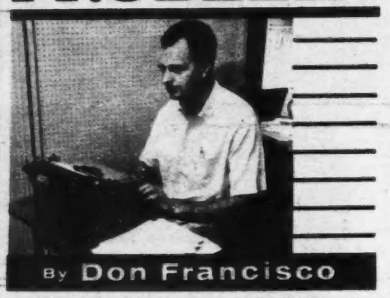

By Don Francisco

MAGNETO FOR STOCKER

Dear Don:

I have a 1956 Ford Customline that has a stock 202 horsepower engine. I would like to know the displacement of the engine and if it can be rebored and to what dimensions.

Also, is it possible to install a magneto in such a car? I have heard that a mag will give a hotter spark. What alterations would be necessary? What are the advantages and disadvantages?

I am planning on installing a triple carburetor setup. What type of carburetor would you recommend and what other equipment would I have to get to install these?

— Leon Swaree
Hayh Lake, Alberta

The engine in your car has a displacement of 292 cubic inches. Its standard bore and stroke dimensions are 3.750 inches by 3.300 inches. The recommended maximum bore diameter for these cylinder blocks is 3.875 inches. This is .125-inch oversize. Boring the cylinders oversize this amount would increase the engine's displacement to 311 cubic inches.

It is possible to install a magneto in any late model automobile. However, the only thing that would justify the additional expense of a mag over a good battery ignition system would be that the car was to be used for drag racing or some other type of competition.

A Scintilla Vertex mag could be installed in your engine without any alterations other than installing a special ignition switch or relay in combination with the standard switch. One of the advantages provided by a Vertex are a spark advance mechanism that can be adjusted to provide the best advance curve for the engine. Such a curve would eliminate detonation and enable the engine to deliver its maximum potential power output. Also, a Vertex is a highly reliable unit that will give many thousands of miles of dependable service. The only disadvantage, as mentioned before, is the high price of these magnetos — $160.00 for your engine.

Carburetors used on most Ford triple installations are Stromberg 97's or Holleys. I would prefer the 97's. Either of these carburetors can be bought new from auto parts stores. It isn't wise to use rebuilt carburetors on a setup of this type because they can be the source of almost continual trouble.

To get the best results from your three-carburetor setup, install progressive throttle linkage on it. This will enable you to drive on the middle carburetor only at all speeds under 70 or 75 mph. This is good for both economy and performance. At any time you wish you can open the end carburetors by merely pressing a little harder on the accelerator pedal.

CAR WORN OUT — SIX MONTHS TO GO

Dear Don:

I just had a major tuneup on my 1949 Ford V8 and the mechanic who did the job claims the engine has two burned valves. The engine doesn't burn oil but he says it might start to if I do a valve job on it. If this is true I might as well have the engine overhauled completely but before I do I wish to know what effect the burned valves have on the way the engine runs.

Will it use more gas because of the valves? Will the valves cut down the engine's performance? Will I have a difficult time starting the engine this winter when the temperature drops to 0 degrees?

I plan to purchase a new car in the summer of 1960. I would deeply appreciate it if you can tell me if my car will hold up that long.

— George Young
Ogden, Utah

A '49 Ford V8 with two burned valves must be a pretty sad piece of transportation at the high elevation of Ogden, Utah.

Assuming the engine actually has two burned valves, and considering the fact that you plan to replace the car sometime in 1960, I would recommend you have a valve job done on the engine by a good mechanic and not worry about the possibility of increasing its oil consumption. The small amount of oil the engine could use between the valve job and the time you get rid of the car would be so small that your pocket book wouldn't notice it. It would be foolish to completely overhaul the engine just before getting rid of the car.

The reason engines sometime use oil after a valve job is that sharpening the valves and seats enables the pistons to create higher vacuum, compression, and combustion pressures in the cylinders. Higher vacuum causes more oil to be forced past the pistons and rings and into the combustion chambers on intake strokes. Higher compression and combustion pressures increase the amount of gases that pass a piston's rings and enter the crankcase. Gases forced past the pistons in this manner carry products of combustion into the crankcase. These products cause the oil to become dirty sooner than it should.

An engine with two burned valves will definitely use more gasoline than it should because it can't use the gas it inducts to its full ad-

vantage. The engine's performance would be poor, and it would be hard to start, especially in cold weather.

TOO MUCH PISTON

Dear Don:

I recently bought a set of high-dome pistons to install in my 3⅜-inch bore '55 Chevy. Now, my problem is this: Will the pistons hit the cylinder heads if I use the stock 8 to 1 heads?

The pistons were used when I purchased them and I noticed small indentations on their domes. The other fellow's heads might have been milled but I can't be certain, and the speed shop in my area doesn't know what to do.

What would you recommend?

— Peter G. Betz
Philapelphia, Pa.

The first thing to do is to install the crankshaft, rod, and piston assembly in the block, with the pistons in their correct positions.

Second, check the clearance between the pistons and the cylinder heads. To do this, first place a cylinder head on one of the cylinder banks, with a used gasket, and position it with a couple of head capscrews screwed into the block a few threads but not tightened against the head. Then rotate the crankshaft slowly while watching the head to determine whether the pistons move it when they reach top center position in their cylinders. Turn the crankshaft at least one full revolution. If the pistons do touch the head, they should leave a mark that will be visible when the head is removed. Check the other head with the same procedure.

The best way of providing clearance at any interference points would be with small grinding stones rotated with a portable grinder. Remove only enough material in the interference area to provide a clearance of at least .060-inch clearance.

The actual amount of clearance provided by grinding the cylinder heads, or that existed before any grinding was done, can be determined by laying a narrow strip of modeling clay on the head of each piston so that it covers the areas where interference might occur and then bolting the cylinder heads and used gaskets to the block with two or three capscrews in each. For this check, the capscrews should be tightened against the heads. Turn the crankshaft slowly at least one full revolution and then remove the heads. The thickness of the clay where it was squeezed between the pistons and the heads will be the clearance between the members. Slice the clay through its thinnest sections with a razor blade and remove the clay on one side of the cut to get the most accurate idea of the clearance.

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Miss Lotta Dough shown relaxing on the palatial grounds of her beautiful suburban home.

P. S. Miss Dough's measurements are 21-21-21.

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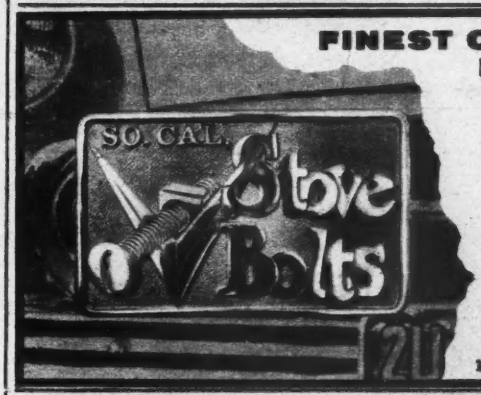

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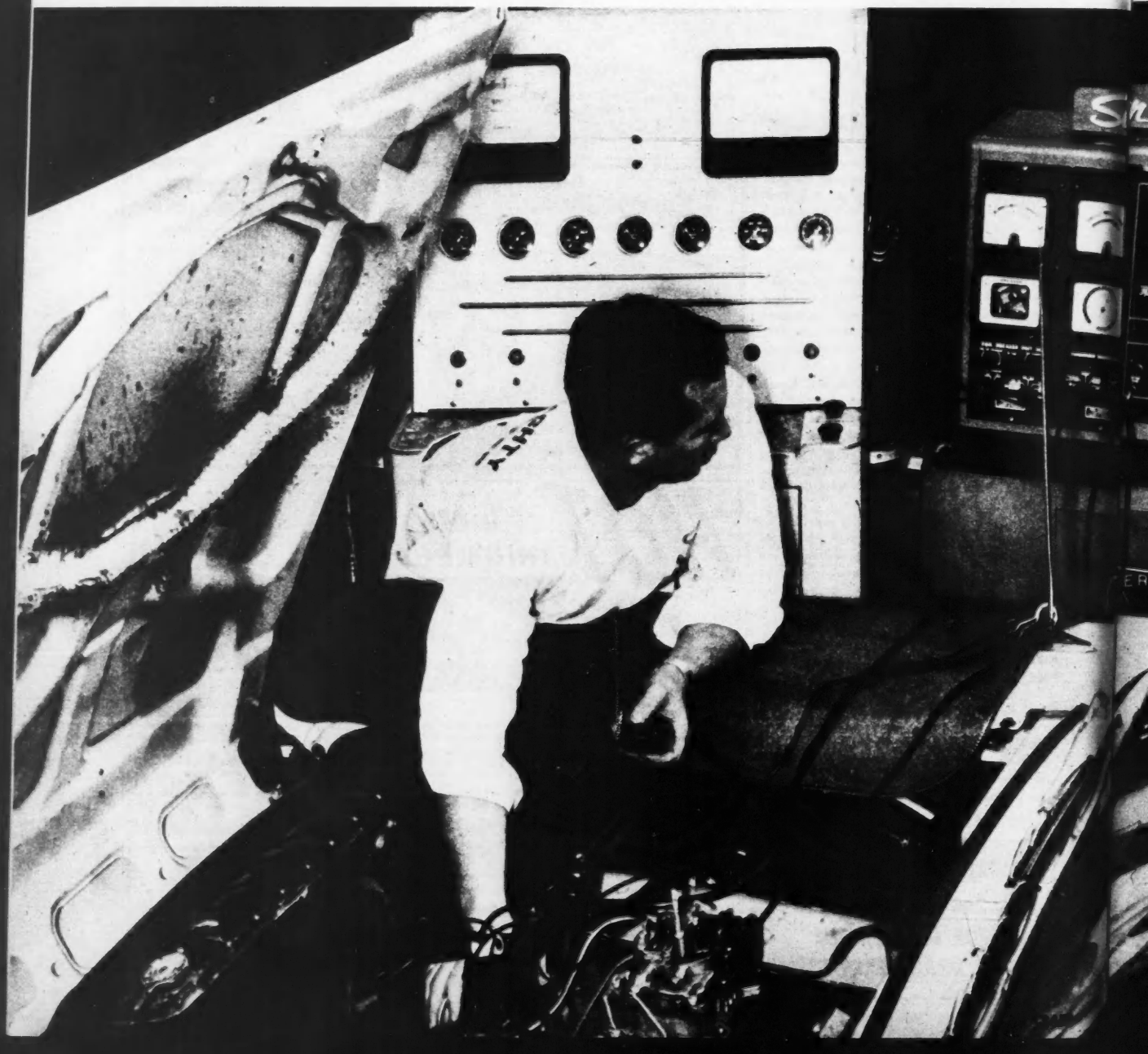
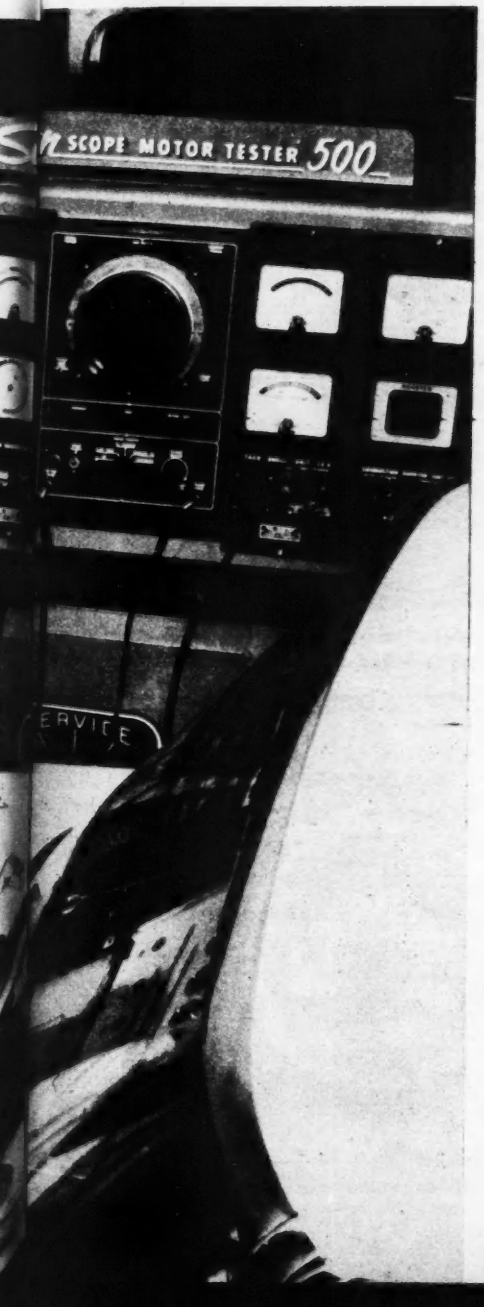
SUPER-TUNING

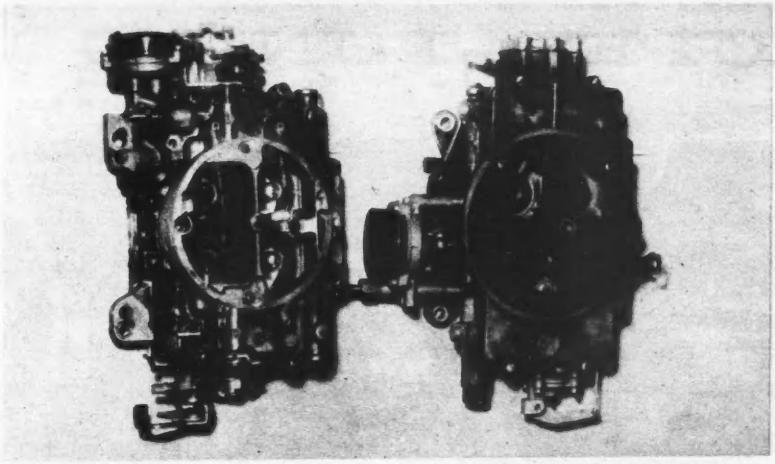
the FORD-MERC-EDSEL-LINCOLN

BY JOHN GERAGHTY

Photos by Colin Crellz







Optional standard equipment on Ford products is the desirable Carter AFB four-barrel carburetor shown at right. The Carter was used in place of Ford and Holley units because of the flexible operation possible throughout the entire HP range.

DURING DETROIT'S HORSEPOWER race of the past five years an ever increasing breed of new car buyers, referred to as performance minded enthusiasts, has originated. Along with growth of this type of consumer a demand for individual operational perfection has caused unfair comparison between many of the leading automobiles. Due to mass production and demands of other types of drivers an intermediate point has been reached that will produce high rates of economy, allowing a low operational cost and still maintain a suitable performance factor. Many cars such as Chevrolet produce engines to cover each of these individual demands where Ford, Mercury, Edsel and Lincoln have fell into the intermediate operational class. Many changes can be made during normal tune-up procedure that will enhance either the rate of economy or high performance factor considerably. We shall direct this article to the latter of these.

Ford's popular 352 cu. in. engine is the particular unit we shall use as our subject mainly because of the high horsepower increase possible due to the factory's lack of interest in high performance operation. A 1959 Ford sedan equipped with a standard transmission and 4:10 rear end ratio belonging to Dave Shoemaker, a drag racing enthusiast from California, was selected as our feature car. All modifications found to be advantageous for the 352 cu. in. engine apply to the 332-383 and 430 cu. in. engines also unless otherwise stipulated.

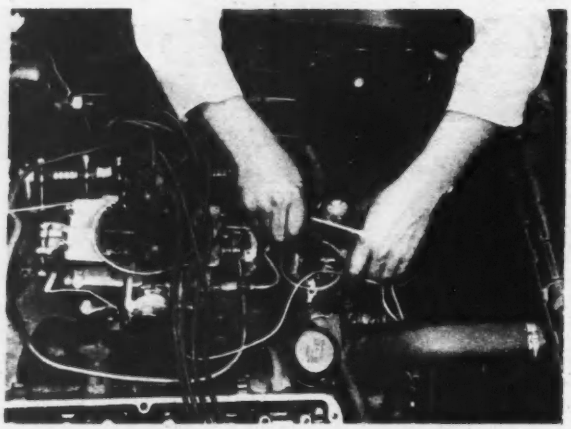
H.P. COMPARISON CHART

R.P.M.	#1	#2	#3	#4	#5	#6	#7
2500	95	102	103	108	126	127	127
3000	120	126	126	130	142	144	145
3500	130	137	142	150	155	159	160
4000	140	152	157	160	164	169	173
4500	120	130	145	148	160	162	182

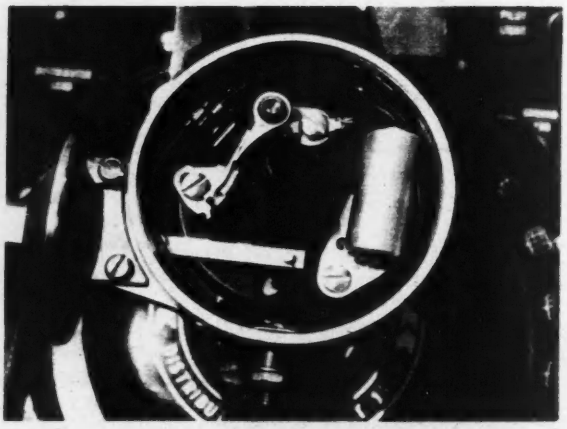
'59 Ford was placed on the Clayton chassis dynamometer, various pieces of testing equipment were connected for commencing high performance tune-up. Chart lists different tune-up steps across top, RPM's at left, respectable HP gains are noted.

CONTINUED

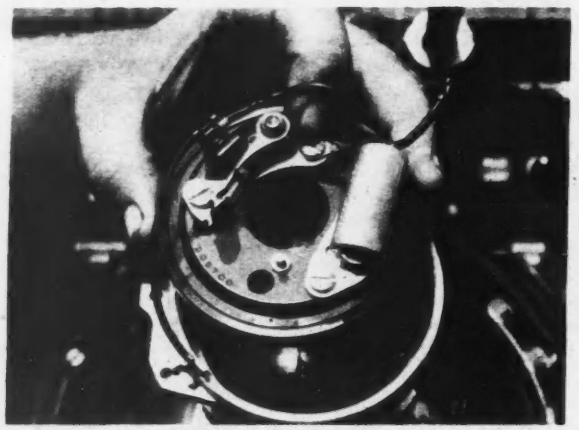
SUPER-TUNING



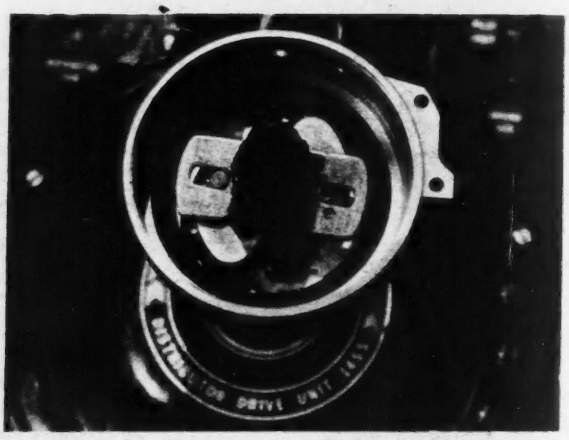
Removing distributor cap, clamp, vacuum line, note position of rotor to assure proper assembly, now remove distributor.



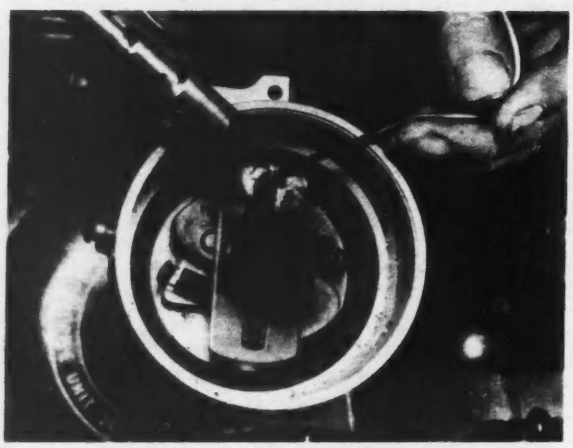
Before any modifications are made to the distributor, all parts; bushings, plates, etc., should be checked thoroughly.



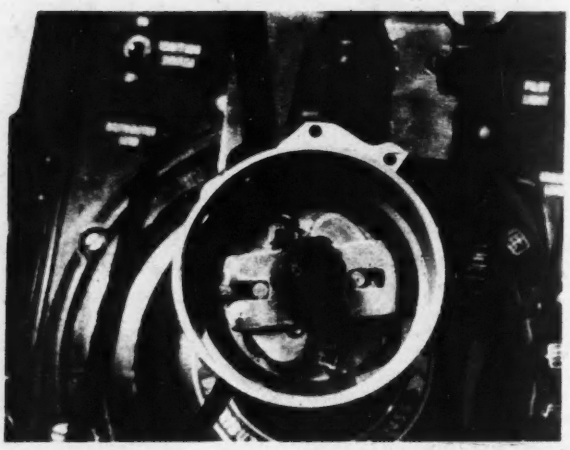
The vacuum advance diaphram, primary distributor leads and distributor plate are remaved to expose centrifugal weights.



Automatic advance is controlled by spring loaded weights. Weight's movement must be halted at ⅔rds travel by stops.



Properly tinning the distributor control plate and new stop bracket, small amount of flux center solder will hold stop.



Curved end of stop bracket should hang down into control slot allowing only ⅔rds of normal mech. advance travel.

After placing Dave's car on our Clayton chassis dynamometer and attaching various pieces of testing equipment we were ready for the super tuning procedure which would release those hidden horses necessary to increase maximum performance. Complete records were kept during the precision tune-up with each test showing comparative H.P. over various engine RPM. Each of these tests will be referred to as test 1, 2, 3, etc., and may be followed on the H.P. graph contained in this article.

Test # 1

Although low end performance was comparatively good, the overall horsepower curve was very poor. The most prominent problem was in the secondary side of the ignition system. The spark plugs were breaking down due to an excessive lean condition and high engine temperature. The 180° thermostat was removed and a flat plate shaped to the size of the thermostat gasket, made from .062 flat sheet material, was installed. A ½" hole was drilled in the center of the plate to allow the necessary restriction of water, this allowed a lower engine temperature to be maintained. A new set of factory recommended Champion spark plugs were gapped to .030 and installed. The carburetor was left alone enabling a check of each operation individually.

Test #2

Although high RPM horsepower improved considerably the oscilloscope screen showed a definite secondary ignition break down to be evident under any maximum load condition. It was quite clear that the factory TVRS secondary wiring, designed as a resistor and equipped with a carbon center, would not carry the necessary secondary coil voltage to the spark plugs. After replacing all spark plug wires with Packard 440 copper center cable and installing a new coil to distributor cap connector we were now prepared for test run #3.

Test #3

The overall increase in horsepower and RPM was quite pleasing and our attention could not be directed to the carburetor system. The air-fuel ratio meter in test #2 indicated 15 parts of air to 1 part of gasoline under maximum load conditions. The desired air-fuel ratio for maximum horsepower is approximately 12 parts of air to 1 part gasoline so it was quite evident that the mixture would have to be richened considerably, and the secondary throttle valves would have to open earlier. The primary jets were enlarged approximately .001 and the secondaries .004.

Test #4

Test #4 showed a sufficient increase throughout the completed horsepower curve. The fine tuning could now begin. An exact distributor curve was plotted and matched to the stock distributor. This was accomplished by locking the distributor into a position that would eliminate both the automatic and vacuum advance. The tuning marks located on the crank pulley are extended to 40 degrees before top dead center. The engine is then put under maximum load at a particular RPM and the distributor is advanced and retarded until the point is found which produces maximum horsepower. This is repeated throughout the complete RPM range and accurate records kept to show the degree of advance required by the engine to produce maximum HP. This curve is then installed into the distributor by the use of different weights, springs, and stops. Desiring high RPM HP the distributor points were installed with great care and a setting of 30 degrees of dwell found to be best. It was also discovered to prevent point vibration over 4500 RPM a small soft piece of rubber had to be installed behind the point arm. (Directions and complete specifications on all ignition modifications can be found in the special ignition section accompanying this article.)

Test #5

Test #5 showed excellent low end horsepower increase. Inspection of the HP graph will show the advantage of a proper distributor curve.

Having perfected the ignition we now directed our attention to trimming the edges off the carburetor system. The Ford and Holly carburetors used in many cases with 332, 352 and 383 engines are limited in control of secondary throttle operation. Therefore the Carter, which is also stock equipment, is recommended. If the Ford or Holly carburetors are used, a decrease in accelerator pump action tends to clean up the low in performance considerably. The lever arm located on the pump shaft is drilled in progressive steps increasing and decreasing in movement of the pump diaphragm. The shorter of these holes is the one to use. The Carter carburetor allows the removal of the weighted secondary throttle shaft and butterflies. This allows an earlier throttle opening under rapid acceleration.

Test #6

Test #6 shows an increase in HP with a Carter carburetor. The same maximum horsepower will be developed with either type of carburetor although the mid range will be a slight bit flatter.

Preparation for Test #7

An exact valve setting was tried to help raise maximum engine RPM. The hydraulic lifters were set with the engine running. Each adjustment was backed off until lifter noise was evident, then the adjustment was tightened slowly until the lifter noise stopped. Approximately ¾ turn more was taken and this proved to be best. The mechanical lifter engines were more versatile. If a higher gear ratio is used a valve setting of .026 intake and .026 exhaust is best, otherwise a setting of .022 and .022 works better by raising the maximum horsepower RPM and allowing a wider overall curve.

Test #7

A higher RPM was reached after the previous valve adjustment and a horsepower increase now capable of pleasing the most demanding Ford, Merc, Edsel or Lincoln owner. Two articles due to appear in near future issues of CAR CRAFT will deal with the installation of the factory interceptor cam equipped with solid lifters and available from your local Ford agency and the installation of a large 4 barrel carburetor. Either of these installations will prove extremely advantageous to further increased performance.

MODIFICATION OF THE STOCK DISTRIBUTOR SYSTEM FOR TOP PERFORMANCE

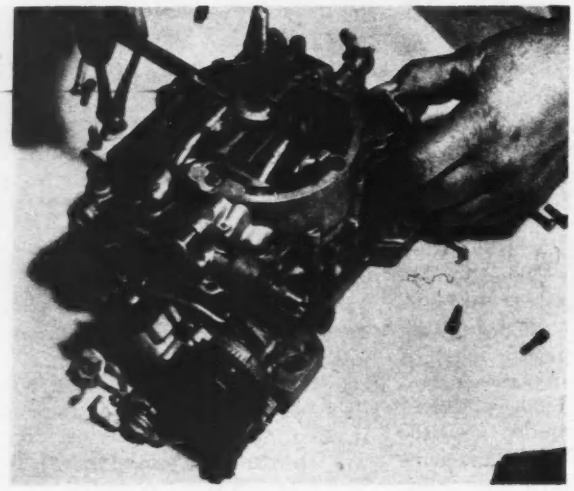
We suggest a local tune-up shop be kept in mind to calibrate the final touches of this ignition system modification and distributor synchronizer.

We will begin with the removal of the distributor. The distributor cap is removed first and a note taken on the position of the rotor. This determines the position of the distributor and must be replaced in the same location. A hold down clamp and bolt located at the base of the dis-

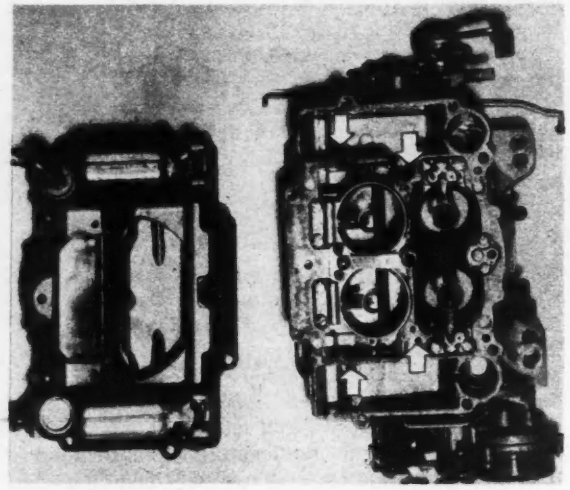
CONTINUED

SUPER-TUNING

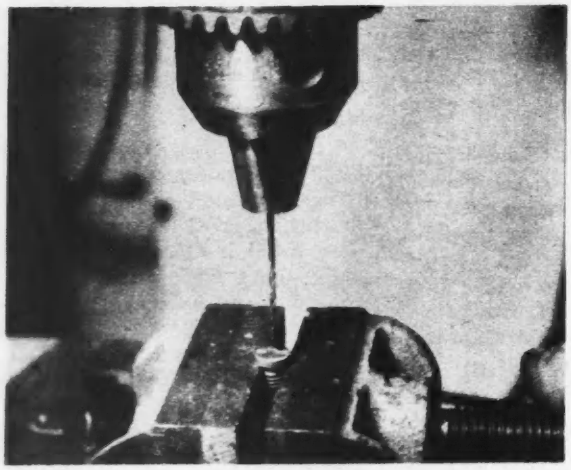
The Carters primary and secondary main jets are made accessible by removing bolt and carburetor air horn assembly.



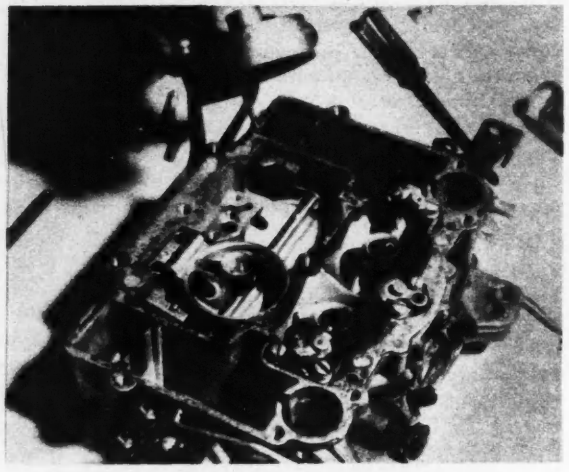
The main jets are located in the lower float bowl body. Use a medium screwdriver, with extreme care, to remove them.



A bench vise and drill press should be used, when drilling the main jets out to larger diameter, to insure proper size.



Secondary throttle governor assembly can be lifted out by first removing left, right venturi clusters. Note positions.



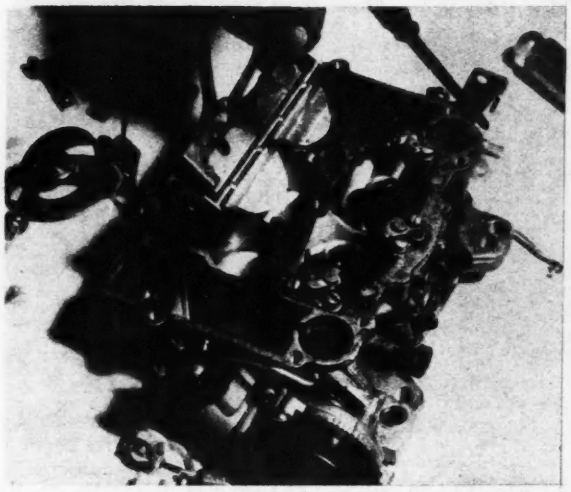
tributor is removed along with the vacuum line and lifted as a unit.

Before the modification begins we must determine the condition of the distributor. The shaft bushings are checked for any excessive clearance by moving the shaft sideways. This is important. Bad bushings will cause the points to vary during opening and closing. The distributor plate is also checked for excessive looseness by trying to move the plate up and down by holding the condensor or any outer edges of the plate. If there is any movement up or down the plate should be replaced as it will cause excessive point vibration and not allow high RPM.

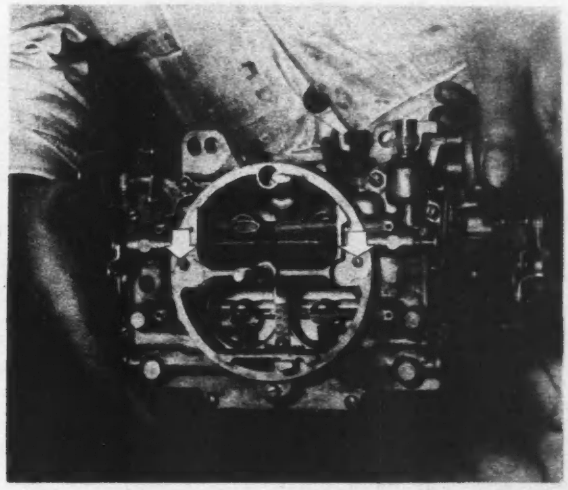
If a distributor synchronizer is available it is recommended procedure to run the distributor from 0 to approximately 4000 RPM keeping track of the stock ignition curve and observing the condition of the distributor cam by the firing location of each cylinder. A variation of 1 degree maximum is allowed for maximum performance. If the synchronizer is not available the advance curve is listed by distributor number and is available in most auto repair manuals. The cam wear can be detected by using micrometers across the highest part of the lobes and comparing figures.

The distributor is now ready for modification. The major change deals with the curve. For those who don't have a chassis dyno in their immediate locale, a good curve for the 332-352-383 and 430 engines is to leave 12 degrees mechanical advance in the distributor unless a low rear end ratio has been installed. If this is the case 8 degrees mechanical advance should be retained in the distributor. The examination of the distributor curve shows that the distributor curve increases gradually from approximately 400-4000 RPM. When the point of 8 or 12 degrees is reached, whichever the case might be, movement of the advance mechanism should be stopped. This is the

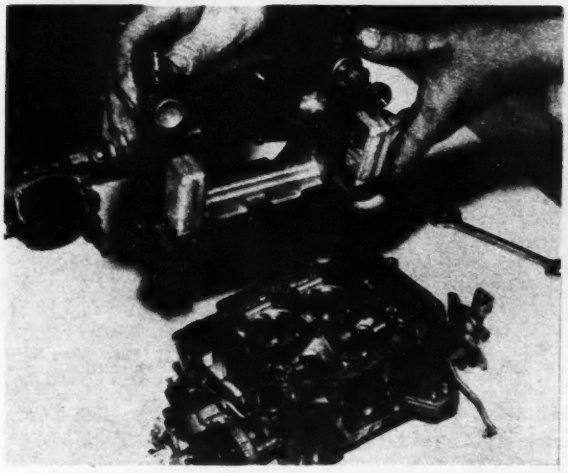
The secondary governor assembly can now be removed by lifting the complete unit gently in a partially opened position.



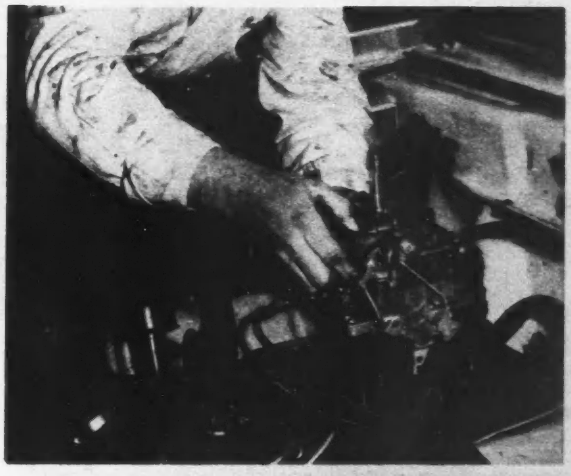
Arrows designate vacuum operated metering rod cover plates. Rods to be removed from air horn before assembly.



After removal of the metering rods, air horn may be installed on the carb body, taking care not to misalign float units.



After bench modifications, install the Carter AFB 4-barrel replacement carb on car. Carter carburetor is all-aluminum.

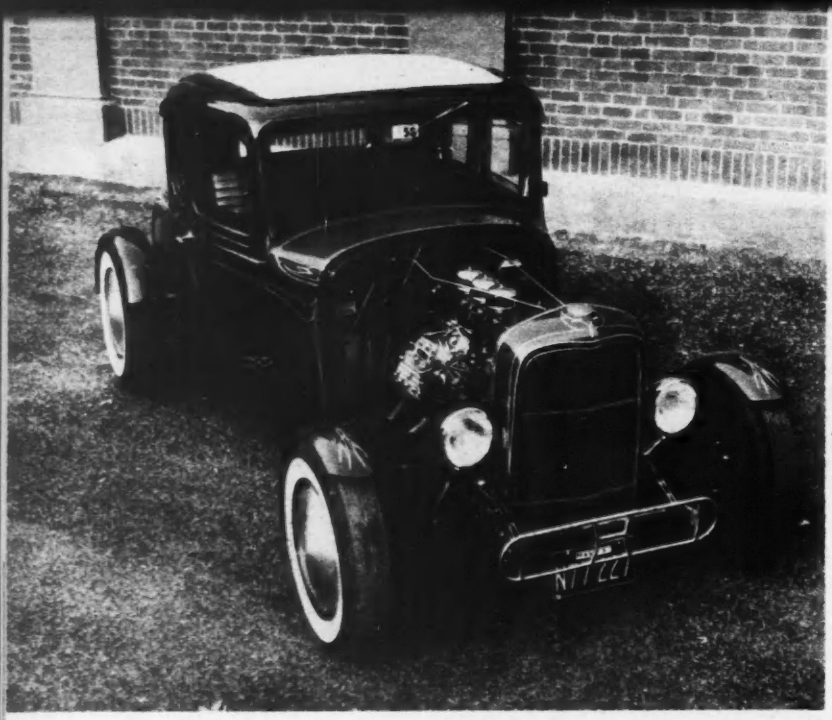


RPM that maximum lead can be used by the engine. It is noticed at this point that by stopping the distributor advance the amount of maximum advance would be less if the original tuning marks would be used. Therefore a relative position must be determined. A maximum total amount of advance must be 38 degrees crankshaft. The crankshaft speed being twice the distributor, all advance in the distributor must be doubled to figure crankshaft degrees. In other words the 8 degrees distributor curve is equivalent to 16 degrees crankshaft and the 12 degrees distributor advance is equal to 24 crankshaft degrees. These figures are subtracted from the total desired amount of advance which is 38 and your new initial tuning mark is the subtracted factor.

The proper procedure for stopping the advance mechanism in the distributor can be found in the complete picture caption story.

Original equipment points and condensors are recommended for installations of this type along with proper care in examining all leads to reduce any chance of a primary ignition ground connection. Alignment of the point faces is as important as the proper point gap settings. 29-30 degrees dwell is recommended. Without these two factors a high RPM ignition is impossible. After a complete double check the distributor is ready to be installed in the same manner as it was removed, keeping in mind the original rotor position and using the new initial tuning mark. With the close examination of the coil, distributor cap resistor and rotor, the modified distributor unit is ready to supply the necessary fire for your high performance stock engine.

The precision tune up not only produced a much more responsive, smoother street machine but proved itself by capturing its class trophy first time out. The car increased its ¼ mile speed from 84.52 to 92.27 and cut elapsed time from 15.97 to 15 flat.



DEUCES ARE

Here's a pair of

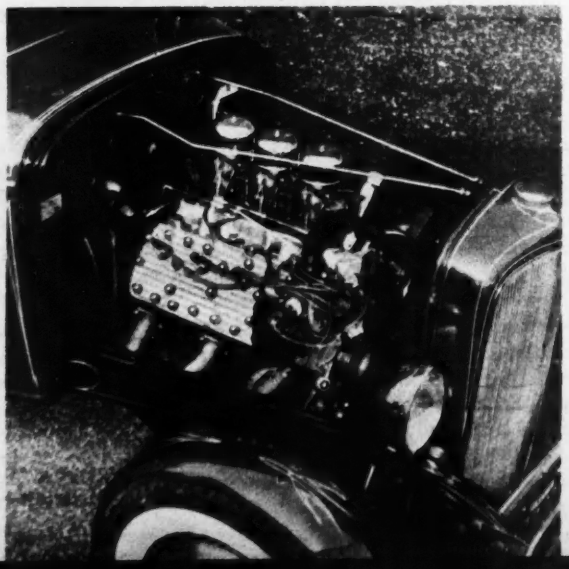
Lexington, Massachusetts is the home for Frank Domenichella and his purple lacquered '32 Ford. Frank constructed the rod in period of two year's time.

Low silhouette is gained by 7½" channeling job on the 5-window coupe. Fenders are cycle-type. Front is dropped 2½" by axle, rear has stock '39 Ford unit. Steering is '38 Ford; '40 Ford juice brakes.

Photos by Dick Day

Rear view illustrates classic channeled coupe stance. Taillights are from '40 Chevy. '39 Ford box delivers power to '39 rear.

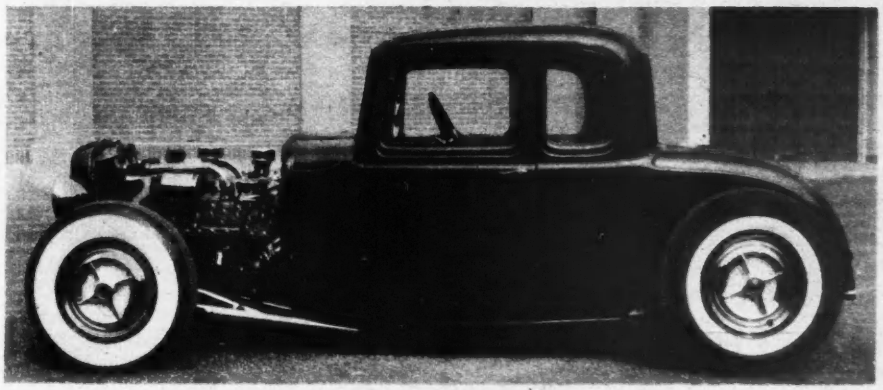
'53 Merc flathead displaces 286 cubic inches with 3⅝" bore, 4⅛" stroke; Edelbrock heads, three 97's also used.



WILD

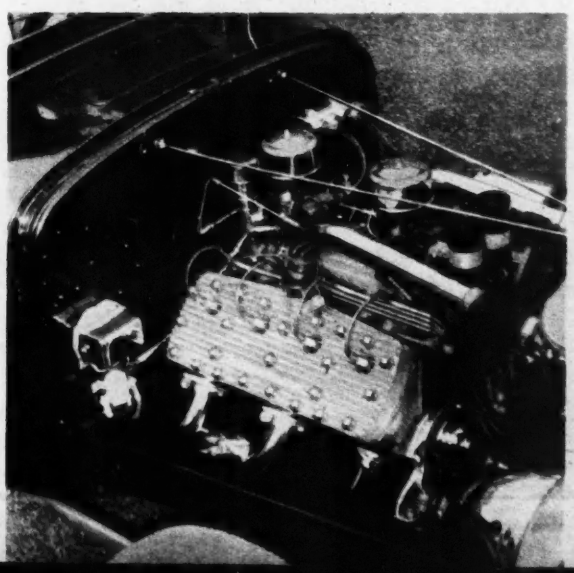
New England's finest

Bob Foster's red lacquered coupe from Brockton, Mass., rounds out the pair. Builder was Bob Paulson of Brockton. Foster is in the 'El Capri' car club.

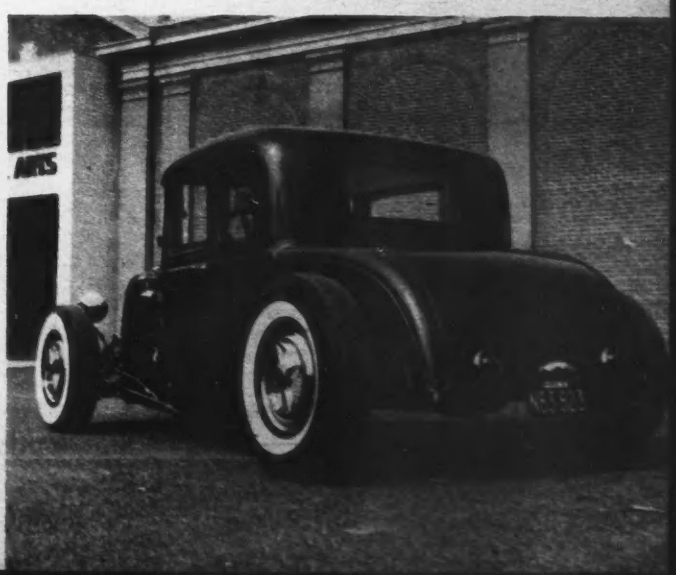


A 7" channel job combined with stepped frame, '40 Ford front axle, stock '32 Ford rear unit gives Foster's coupe low slung carriage. Brakes & spindles are '40 Ford, with '54 Ford truck steering gear.

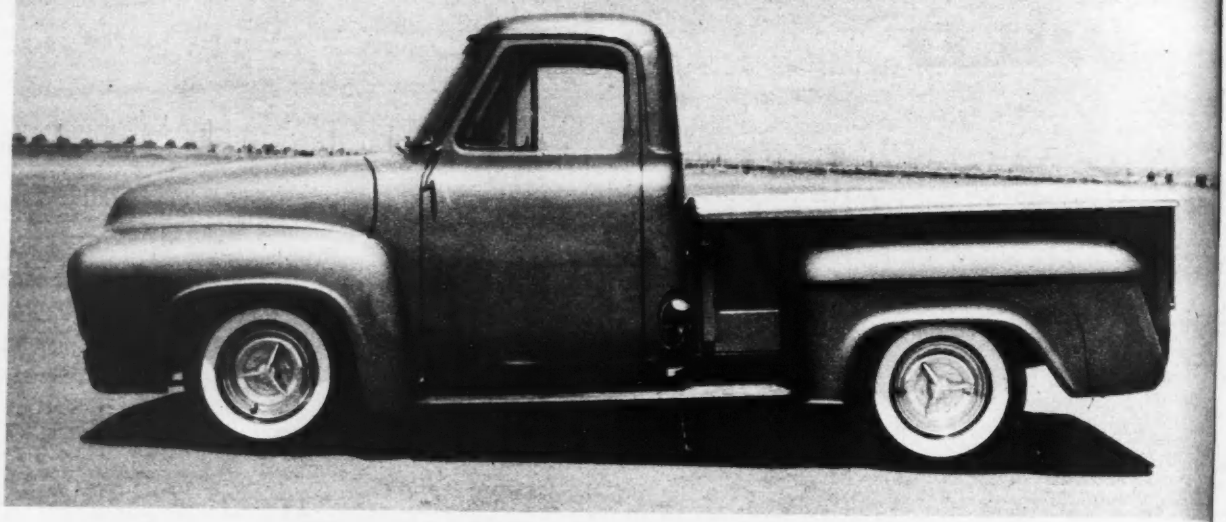
255 cubic inch '41 Merc has 3 3/16" bore, 4" stroke, Jahns pistons, Offy heads, H-C cam, and Edelbrock manifold.

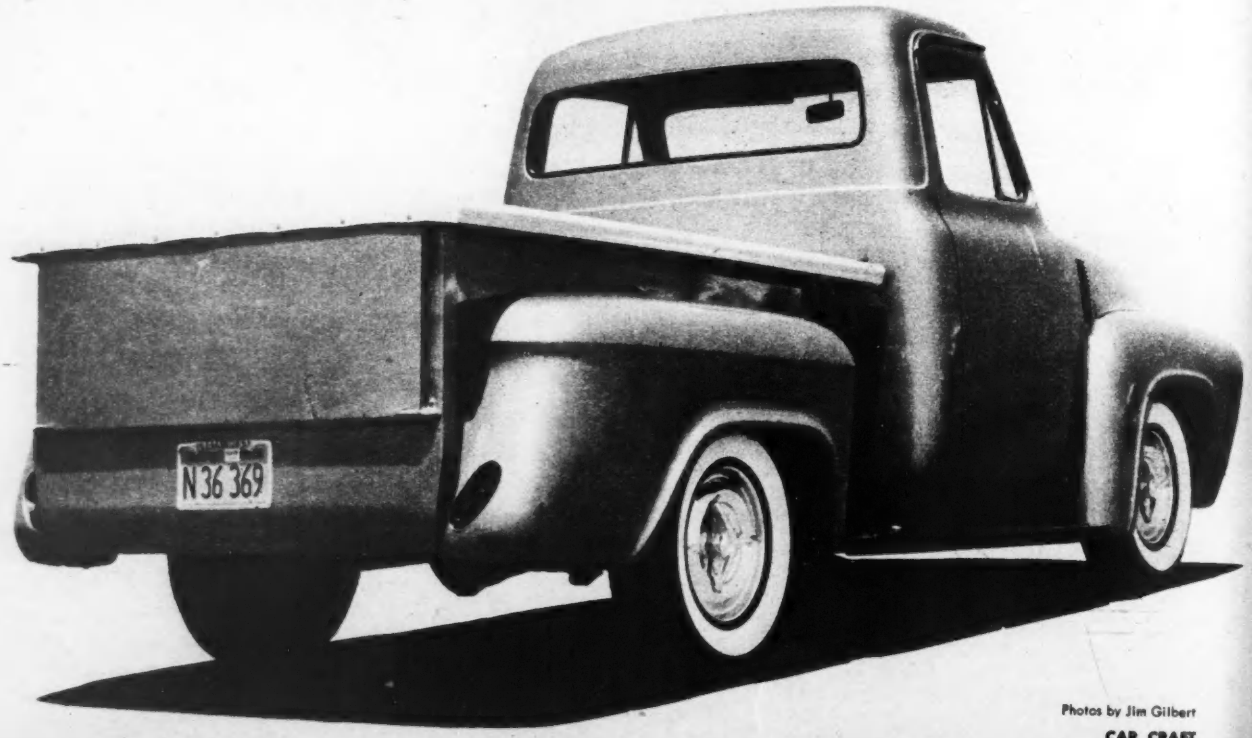


Pontiac taillights are added to unprotected rear end of deuce. Foster's transmission is a '40 Ford column shift with '32 rearend.



PERSONABLE PICKUP





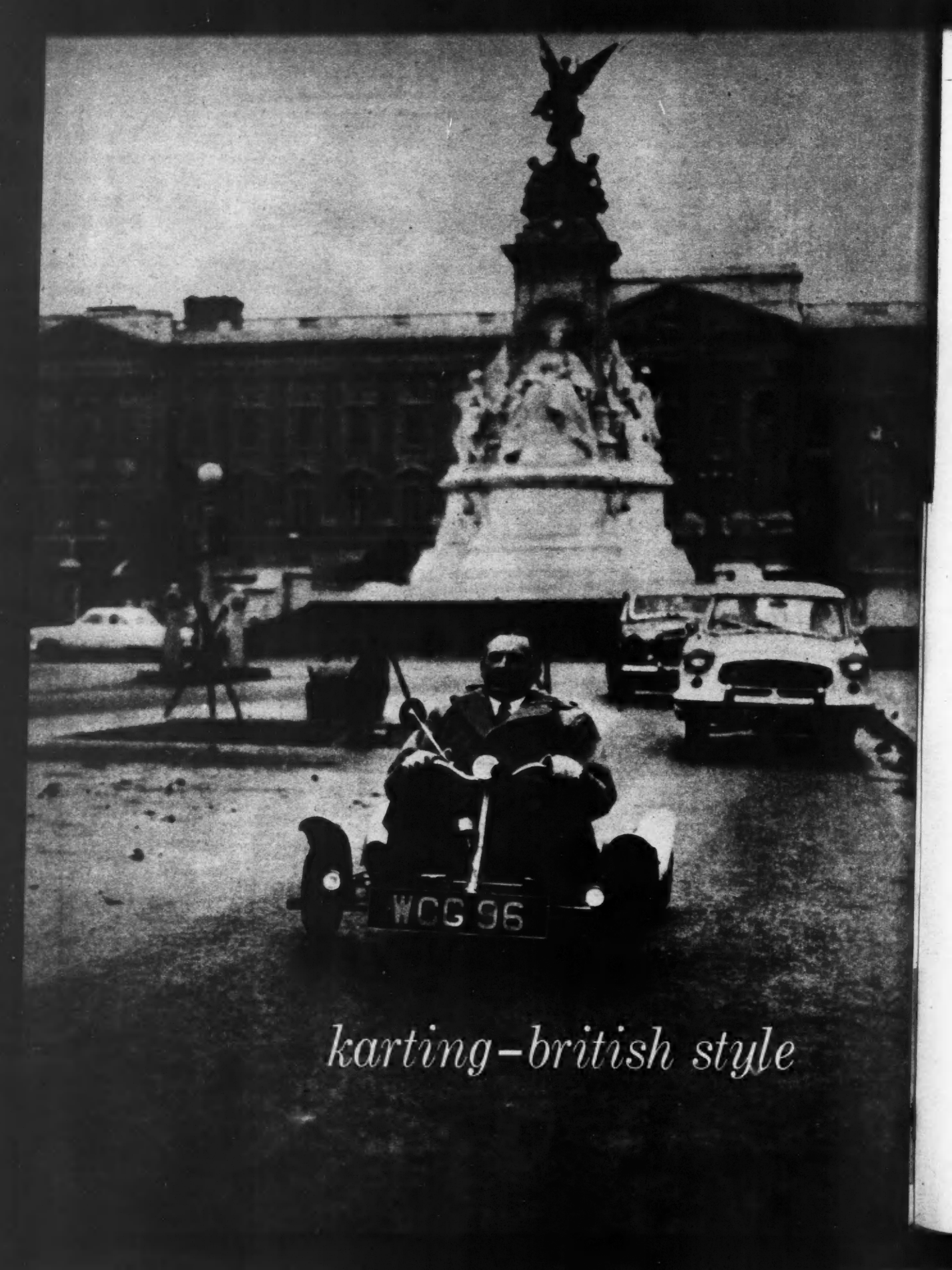
Photos by Jim Gilbert
CAR CRAFT

Earl Ellis of Costa Mesa, California built his custom '55 Ford pickup in a period of three months at his Costa Mesa body shop — Ed's Auto Repair. Quad's are Imperial units, used to compliment chrome-framed mesh screen grille assembly.

ABOVE LEFT • Starfire green lacquered pickup sits low in front due to 'dagoed' axle; rear is also lower than stock, accomplished through removal of two leafs in springs. Door handles have been removed, solenoid system is substituted.

LEFT • All chrome has been removed from body, lending an extremely 'clean' appearance. Interior of pickup bed is hidden from view by white Naugahyde tarp. Rear fenders are from '55 Chev pickup — almost a natural combination.

Rear pan is reworked, as is front counterpart. Tailgate is stretched and filled to a smooth surface, eliminating the tradename. Taillights, set at a canted angle, are '58 Ford lenses tunneled into Chevy fenders. Nerfs are on the way.



karting–british style

Cog-swapping and hot handling turn English karts into miniature Grand Prix racers

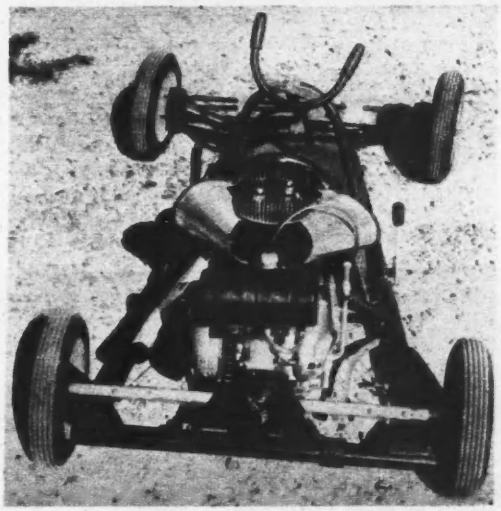
WITH KARTING JUST getting a solid foothold in the States, it is surprising how this American bred sport has taken hold in Great Britain during the past year, expanding to the point where over 30 manufacturers are engaged in producing karts. Among these are such firms as Austin Burrell, leading outboard motor manufacturer; Jackaroo Aircraft; Armstrong Whitworth, and Southern Aircraft, all prominent in the aircraft industry; the Norris Brothers, famed for their association with Donald Campbell in the design and construction of his record breaking Bluebird speed boat, and Jim Russell, famous English 500 c.c. motor racing ace.

Not surprising is the fact that the Royal Auto Club, controlling body of all motor sports in Britain, the equivalent of our own AAA and USAC, have set up regulations and rules regarding kart racing in England. They used the Go Kart Club of America rules as a foundation, altering classes of competition, etc., to fit their local requirements. Recognition of karting, a strictly amateur sport, by the famed Royal Auto Club, is something that American sanctioning associations would do well to note.

Where industrial engines provide motivation for the majority of U.S. karts, motorcycle engines are primarily used in the English karts, the Villiers line being one of the most popular. Clinton engines, very familiar to American karters, are also in widespread use in England, being distributed by The Trojan Co., Croydon, also manufacturers of the popular Trokart which is available in single and dual engine form using the popular 5.8 inch Clintons for power. English classifications are: up to 100 c.c. (6 inches) industrial; up to 100 c.c. motorcycle; up to 200 c.c. (12 inches) industrial; up to 200 c.c. motorcycle. The motorcycle classes are further broken down into gearless units and engine-gearbox units, the latter of which are dominating the scene.

Availability of a gearbox and shift lever makes the English kart a miniature Grand Prix racer, allowing drivers the thrill and excitement of big-time racing at low cost, putting them in sort of a Stirling Moss category. Quoting Villiers representative Mr. Ronald Price, "every driver worth his salt enjoys 'cog-swapping'," an opinion having much bearing in the setting up of karting courses throughout the British Isles.

Racing and demonstration courses are being designed with no straight stretches longer than 150 yards, the whole essence of karting fun being in racing through turns and chicanes, putting the accent on driving skill rather than all-out speed. The general thought concerning long straights is that they will destroy the qualities of steering and grip for which these karts have been designed, turning an energetic, fascinating sport into sprint races, thereby lessening interest in karting for all concerned.

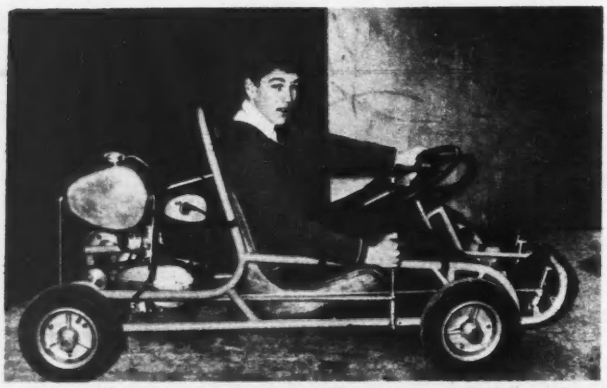


Pioneer English kart, Motor Book's M.B. Wasp runs a 197 c.c. Villiers engine. At top, Chris Bristow, ace Grand Prix pilot, races M.B. Wasp at famous Brands Hatch race course. Note air tanks for engine cooling.

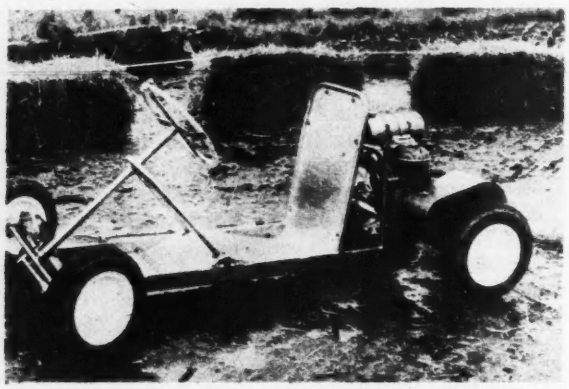
Brands Hatch race course, normally scene of professional racing, is invaded by English karters, under sanction of the Royal Auto Club, British racing organization. In lead is Mike Henderson, M.B. Wasp driver, a Tro-Kart immediately behind him. Silencers were required due to Sunday race date.

CONTINUED

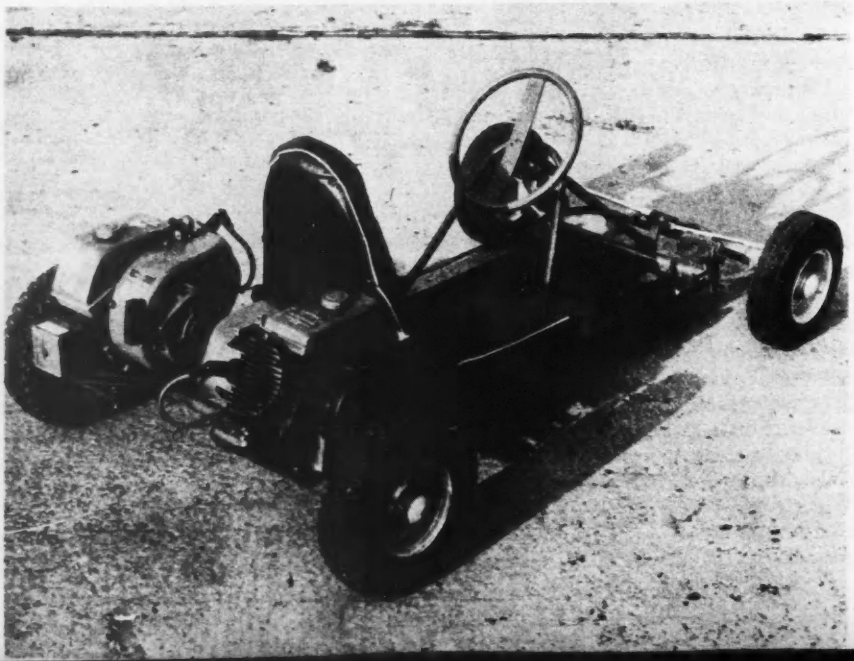
karting—british style



A real topnotch piece of machinery, bar none, is the Keele Kart, manufactured by Keele Engineering, of Tring. Designed for the "discriminating enthusiast", it runs either the 98 c.c., or 197 c.c. Villiers engine, shift lever at the driver's side.



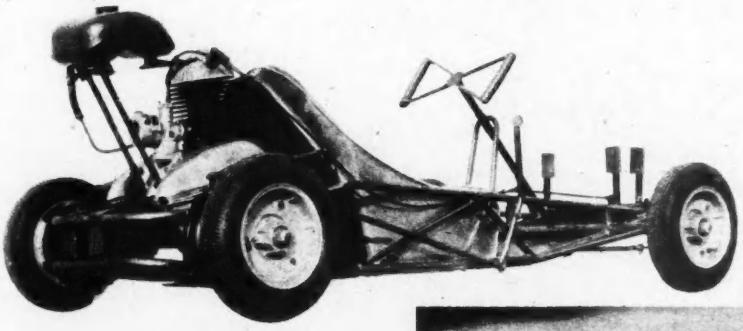
Unique J.E.C. Auto Kart is powered by Vincent thoroughbred 2-stroke, of Vincent H.R.D. fame, one or two cylinders for competition in either class. Engine, trans, rear axle can be removed as unit for repairs. Runs live axle, auto. clutch.



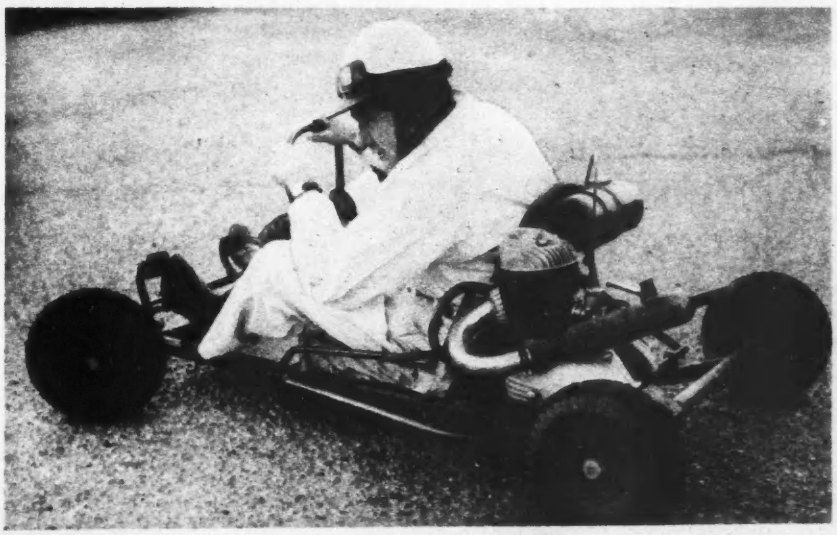
Of all the English karts, the one that probably comes closest to any U.S. kart in design is the Trokart, by Trojan Ltd., in Croydon. At left is their Trokart Trackmaster which employs twin 5.8" Clintons. Single engined karts are also available. Royal Auto Club specifications for British Karts are similar to ours. Wheelbase limitations are 40" min., 50" max., overall length 72" max. The motorcycle engine powered karts have three foot-pedals though, one needed for the clutch.

Photos courtesy Motor Books, Villiers, Gordon Wilkins

UPPER LEFT • The English girls are on the kart courses too, out to show the men, with Villiers powered karts yet. UPPER RIGHT • Giving demonstrations near Wolverhampton, an Aero Kart leads a Fasta Kart through the turns. Tracks are being set up throughout England as thousands take to karting trail.

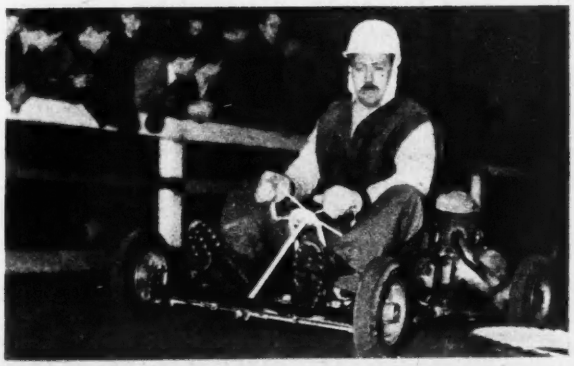


ABOVE • With comfort in mind, the Progress Grand Prix Kart, is of space frame construction, runs either the 98 c.c. or 197 c.c. Villiers two-stroke mill.

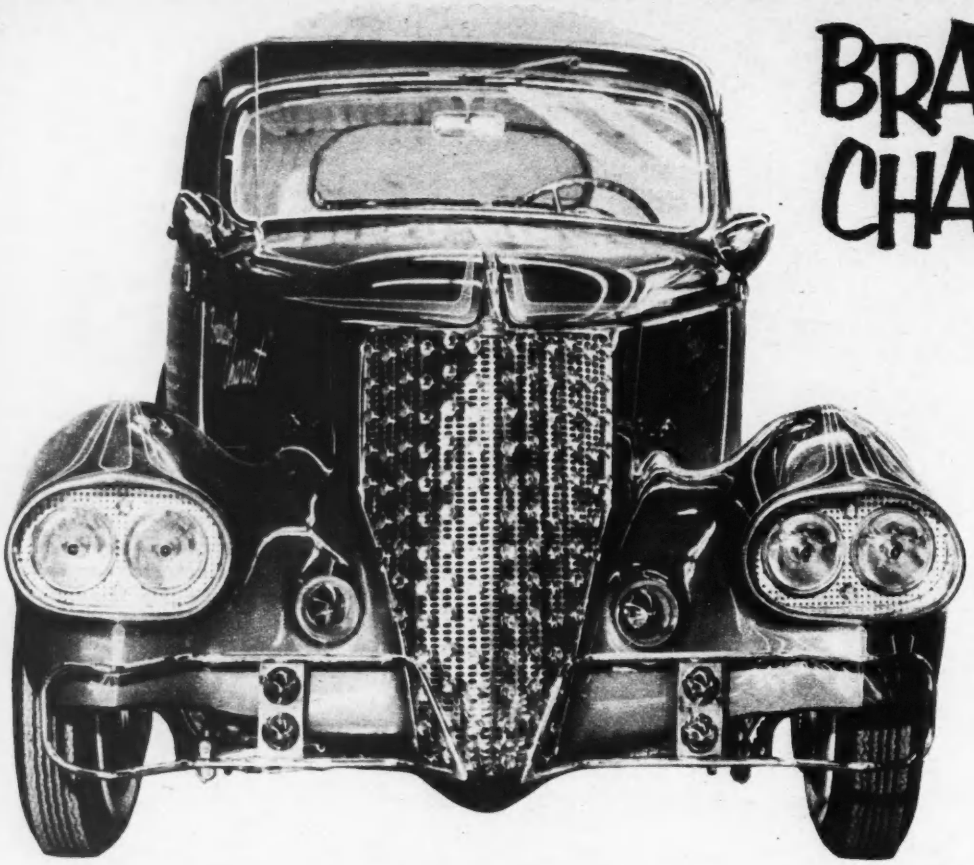


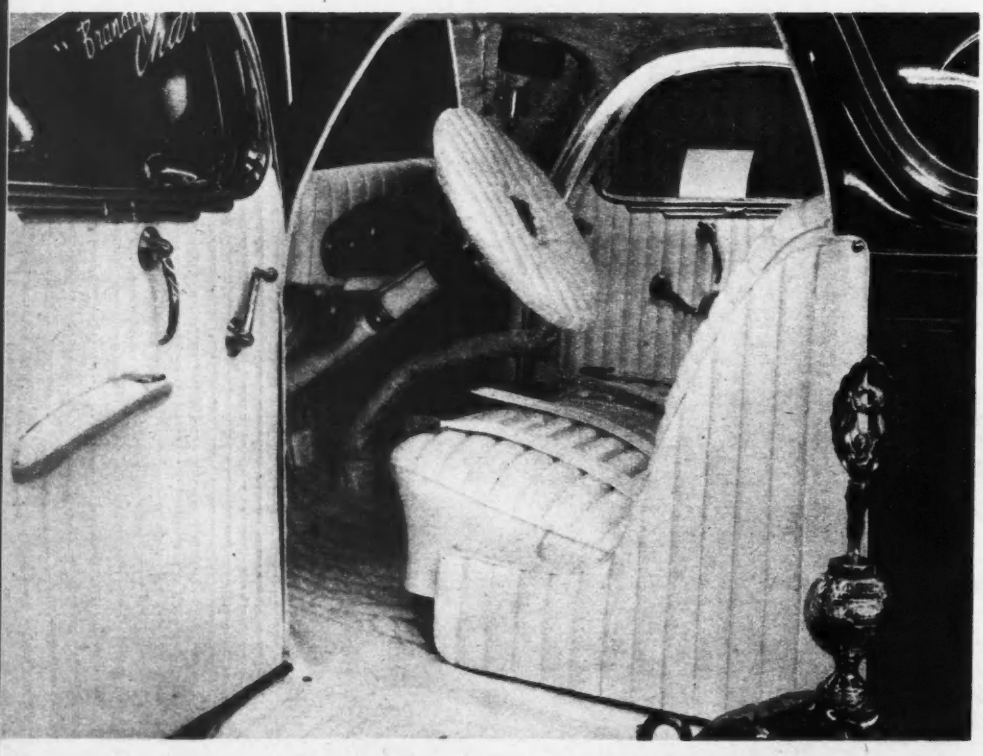
RIGHT • J. E.Saunders, chief tester at Villiers Engineering, puts a kart to the test. Like many British karts, this one is powered by the potent Villiers.

BELOW • Rounding a marker, husky karter dwarfs his Bromyard Engineering Fasta Kart. Running without mufflers, Villiers 2-stroke makes lots of noise.

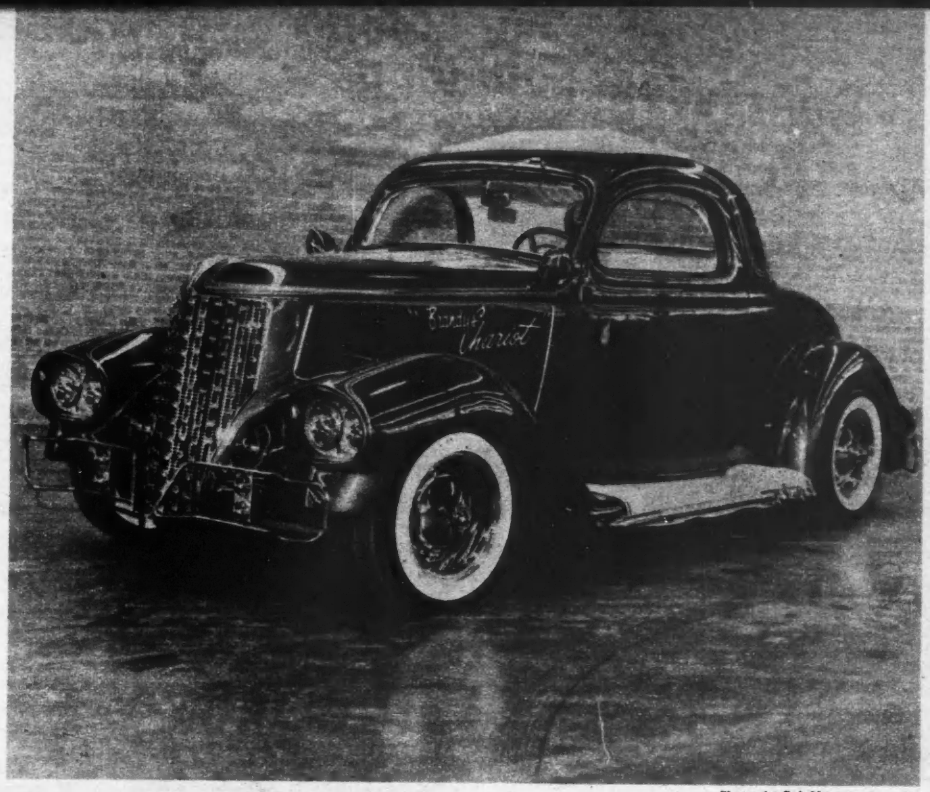


BRANDY'S CHARIOT





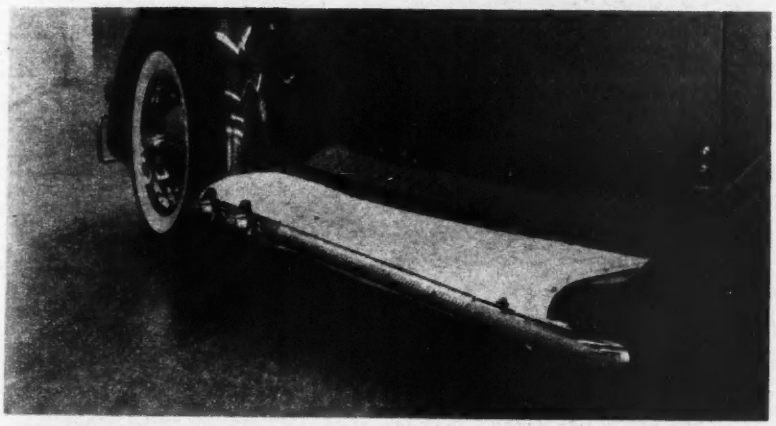
Decked out in full show dress, William Block's '36 Ford from Kenosha, Wisconsin, exhibits a c-o-m-p-l-e-t-e pleated and rolled white Naugahyde interior. S-W dash panel is set on covered dash. Items of interest: steering wheel, pedals, floor shift covers. Work performed by Levia Upholstery Shop, located in Chicago, Ill.



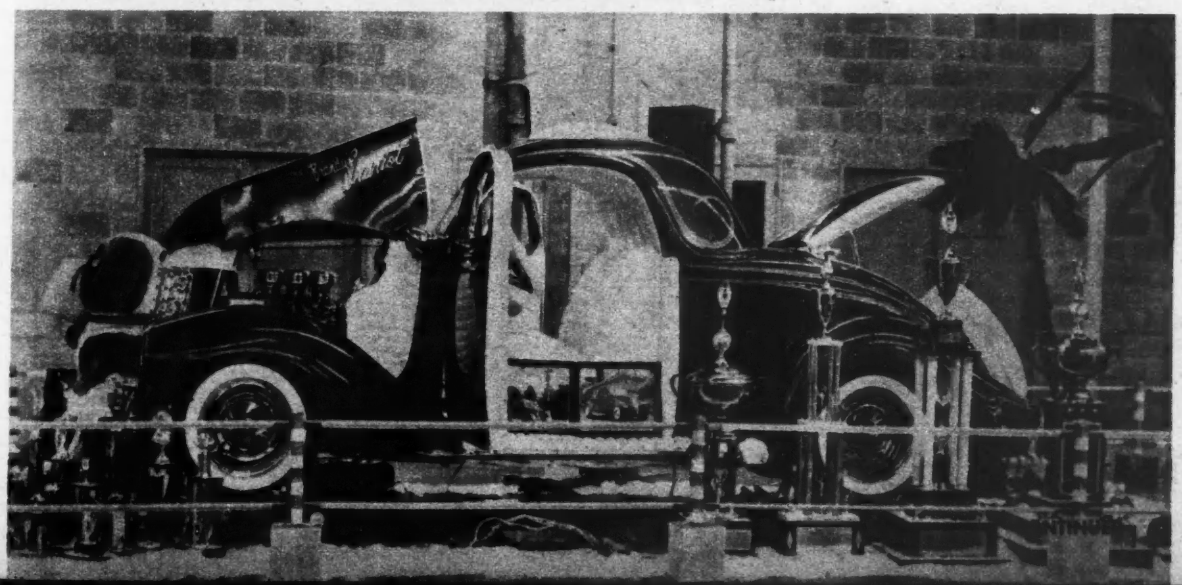
Strict conformity to present custom trends is evidenced in updating of '36 coupe. The front end is perhaps the most thorough with a mesh screen grille supporting drawerpulls.

White Naugahyde covered running boards are for show, but ribbed lakes pipes are permanent; small bullets used on caps for added custom look. Fender exit for pipes.

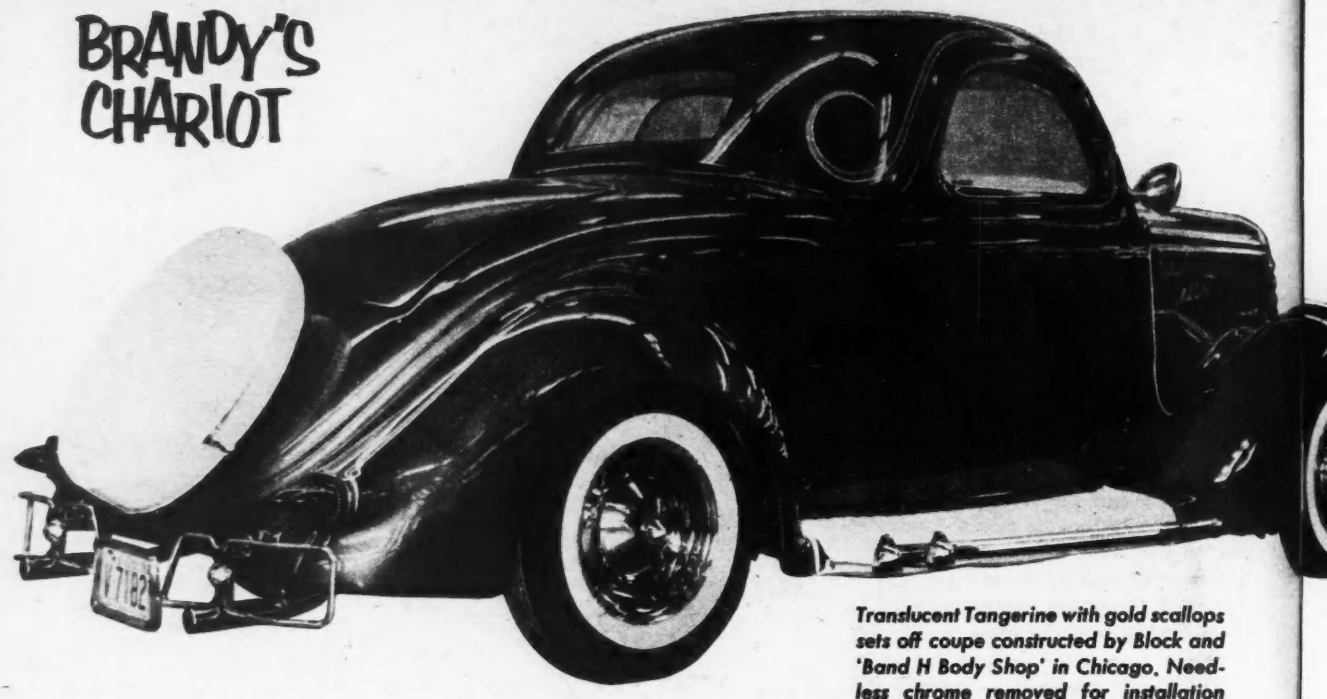
Photos by Bob Hegge



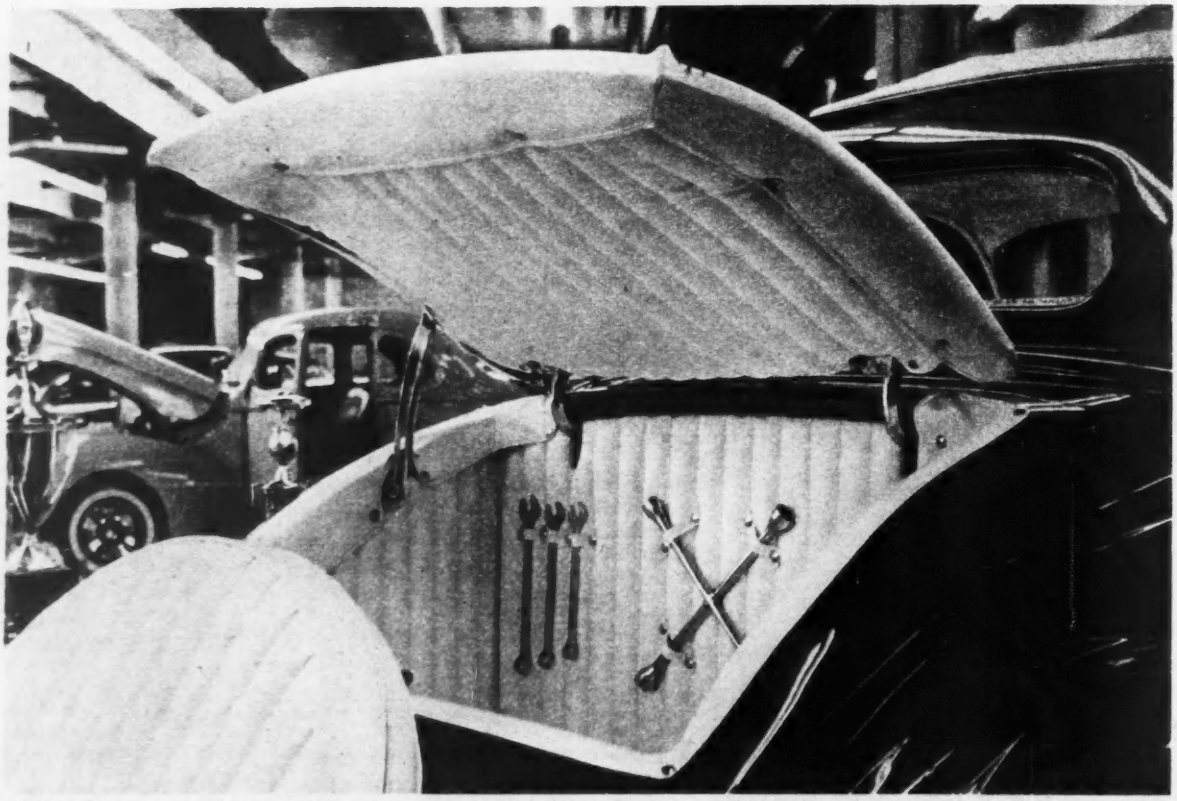
Show regalia is complete, illustrates Chariot's winning ability. Among items on exhibit are numerous trophies from previous conquests, 'before' and 'after' photos, protective railing, driftwood, and huge stuffed dog (!?) for display.



BRANDY'S CHARIOT



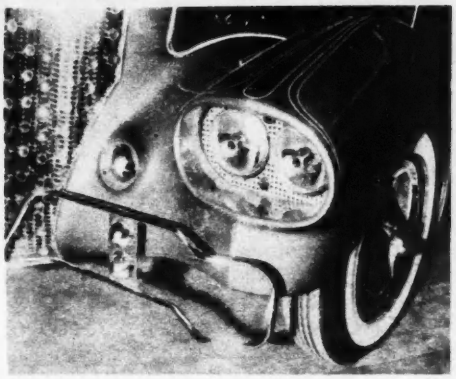
Translucent Tangerine with gold scallops sets off coupe constructed by Block and 'Band H Body Shop' in Chicago. Needless chrome removed for installation of accessory equipment. Note wheels.



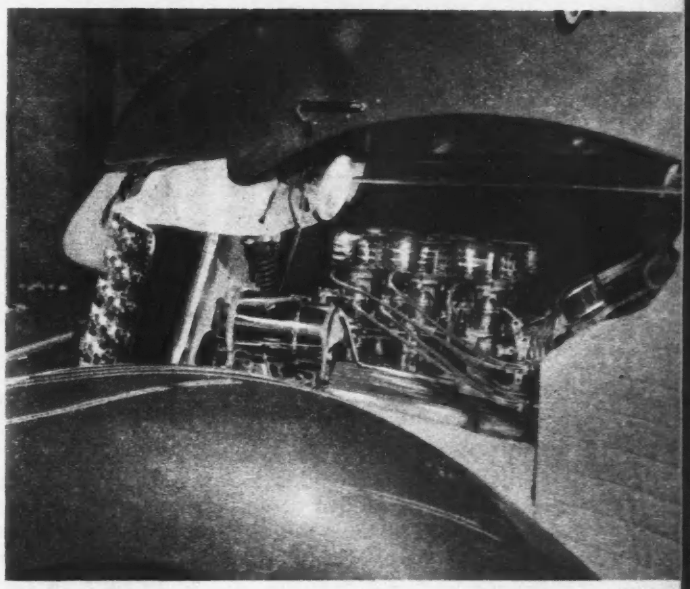
When he says complete upholstery, he means it! Attractive white Naugahyde has been pleated and rolled, installed in trunk area. Selected tools are neatly mounted on panel. Upholstery motif extends to spare tire cover, open top portion.

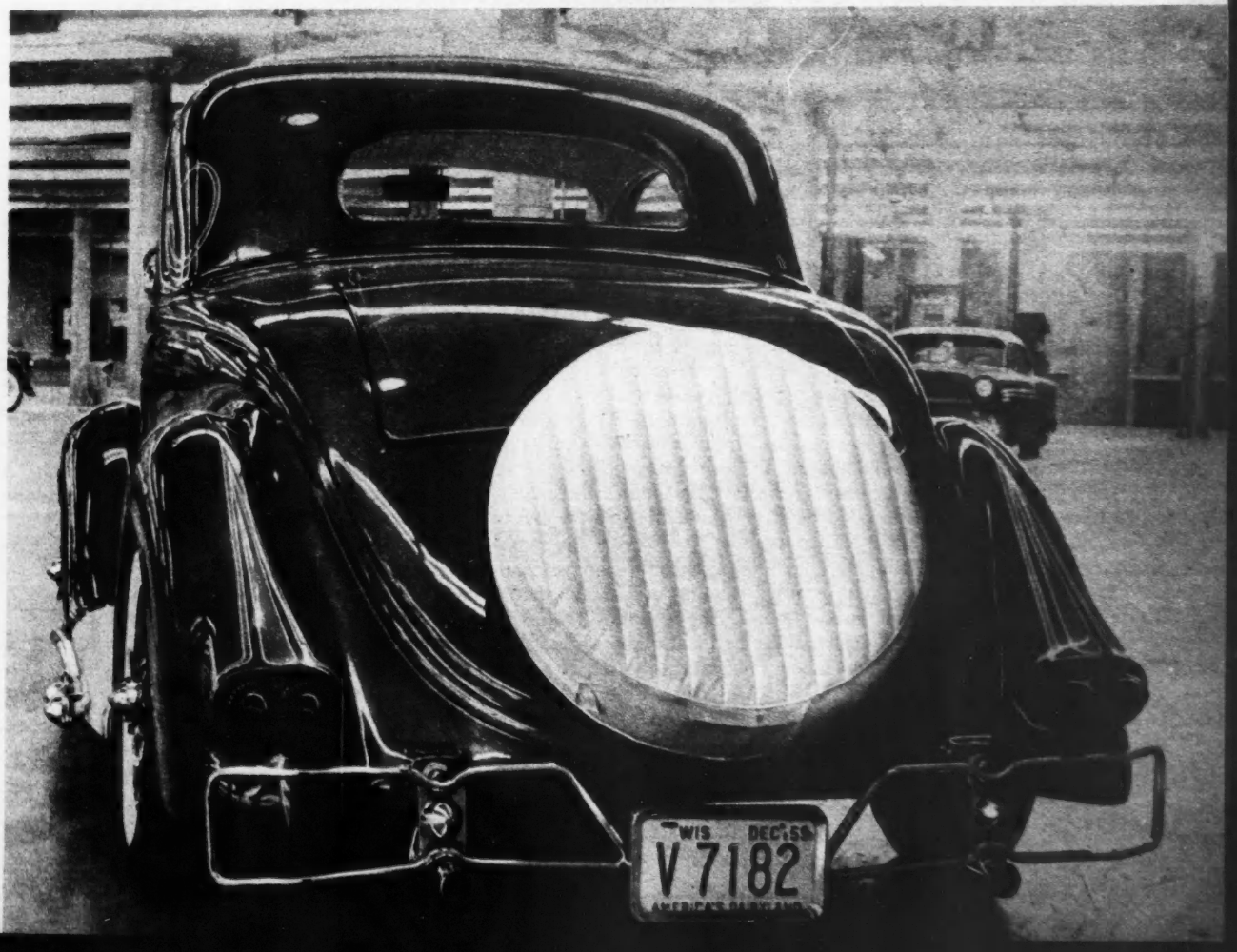
Probably most difficult metalwork on car was this installation of quad Lucas headlights on perforated metal mounting plate in fenders. Horizontal bullet-mounted antenna is added to position originally occupied by small air vent.

BOTTOM • Protection for rear end is provided by nerf bar bumper. Caddy taillight assemblies are installed in tunneled extension on fenders also adding new curve to molded rear panels. The roll-down rear window is still retained.



An immaculate engine for an immaculate car. Full-race '59 Corvette has Offenhauser 6-carb manifold. Duntov cam, solid lifters, reworked valves, springs, fuel injection pistons.



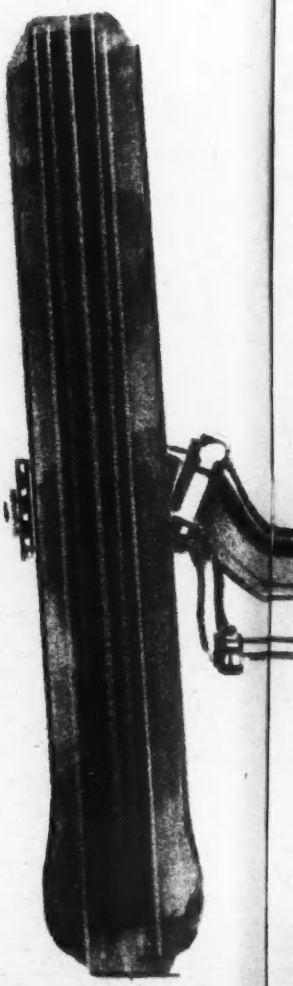


DREAM ROD 1960

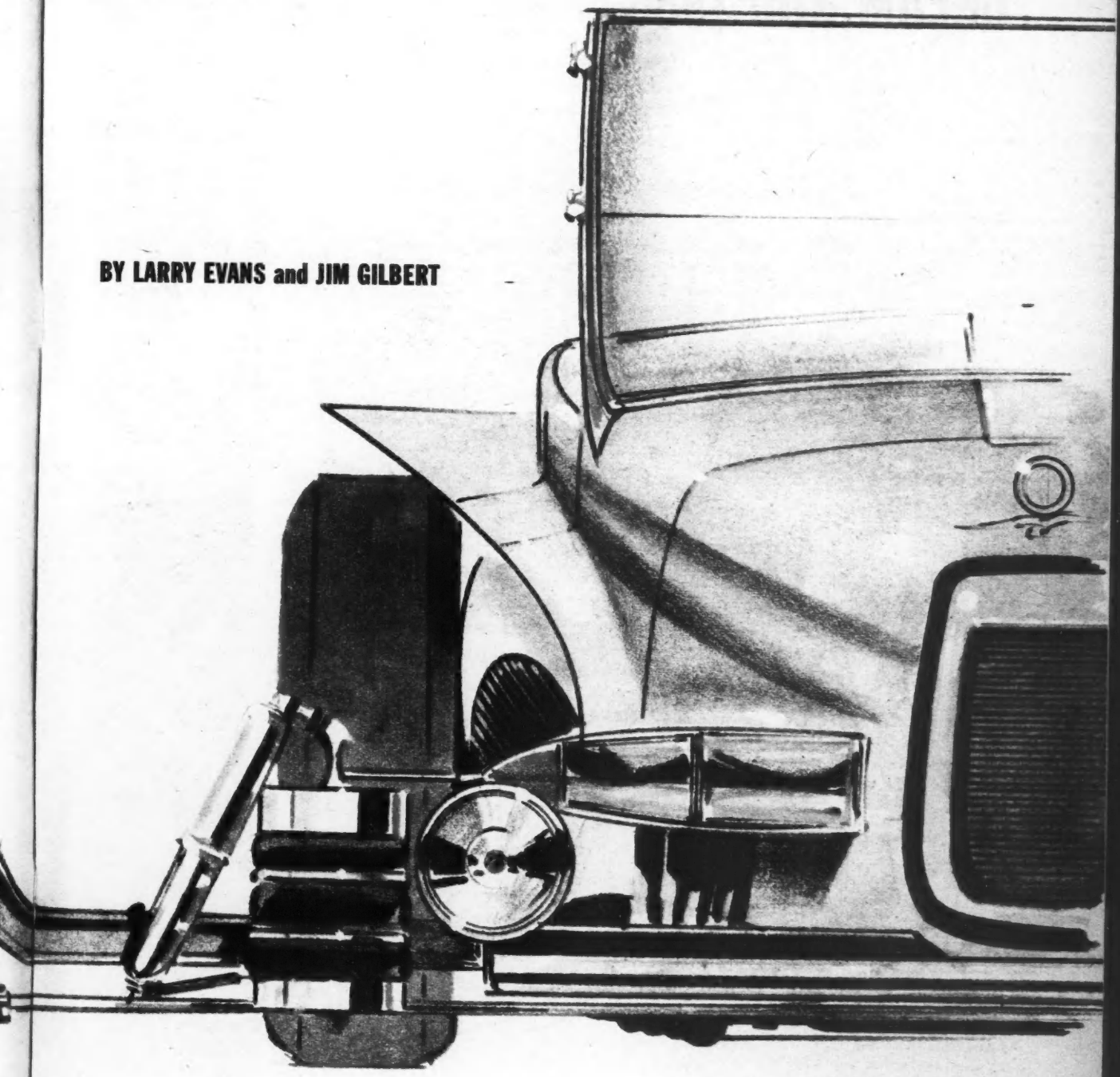
A PRODUCT OF THE mind's reverie process, the dream car of today often becomes the standard transportation car of tomorrow if the theories and concepts behind its present design are feasible to assembly and acceptance. Such is the case of Car Craft Magazine's DREAM ROD 1960. Borrowing a few workable ideas from present day roadsters and blending them with futuristic speculations, we have what we believe to be a design element which will probably be the general theme that the trophy winning roadster will follow during the present decade. As with all dream vehicles and machines, it could be outmoded in a day. This bears with the current trend in 'way-out' roadster styling ably conceived by Dick Peters and Ed Roth with their respective Ala Kart and Excaliber (Outlaw) rods. Their creations caused no small stir in roadster circles, going as far as initiating an entirely new concept of roadster styling which had been until then virtually untapped. An equal reaction could again occur perchance an imaginative rodder unveils a relatively new thought in styling and construction that will provide design uniqueness and allow variation from car to car. The DREAM ROD 1960 is just that—*today's* dream roadster. It can and will be replaced by a new philosophy of roadster building. We only hope that Car Craft's rod will spur you onto new discoveries in the hot rod building field.

On the DREAM ROD, the basic foundation is constructed of chrome moly tubing. Two factors in the choice of this material are its light weight and rigidity. The wheelbase is approximately 85 inches which makes the rod extremely short in length. The front axle is a three inch dago unit and is cushioned with Air Coil suspension and 50-50 shock absorbers. Mounted on the dagoed axle are 16 inch competition motorcycle wire wheels which in turn mount high speed motorcycle racing tires. The steering assembly is a quick ratio '34 Willys assembly. The rear running gear is Air Coil sprung, snubbed with identical shocks as on the front. Large size reversed and chromed wheels are employed and slick tires are used. Adorning the wheels are small chromed Acorn nuts and hubcaps with small bullets installed on the center. Power assisted brakes are taken from a '60 Buick. These are mounted on the rear wheels only and are finned aluminum.

Attached to the tubular chassis is a sculptured-type roadster body fabricated of fiberglass. Borrowing classic roadster styling and modernizing the design, the shell is typical of the new trend in rod bodies. The front end features a unique headlight treatment composed of two Lucas driving lights and four square-shaped European lamps similar to those seen on Raymond Loewy's latest sports car. The grille assembly is constructed of thin tubular steel which lends a clean, crisp appearance and is mounted in the forward tilting hood that provides complete access to the full-race '60 Corvette engine sparked with fuel injection. The powerplant is coupled to a four-speed synchromesh Corvette trans.



BY LARRY EVANS and JIM GILBERT



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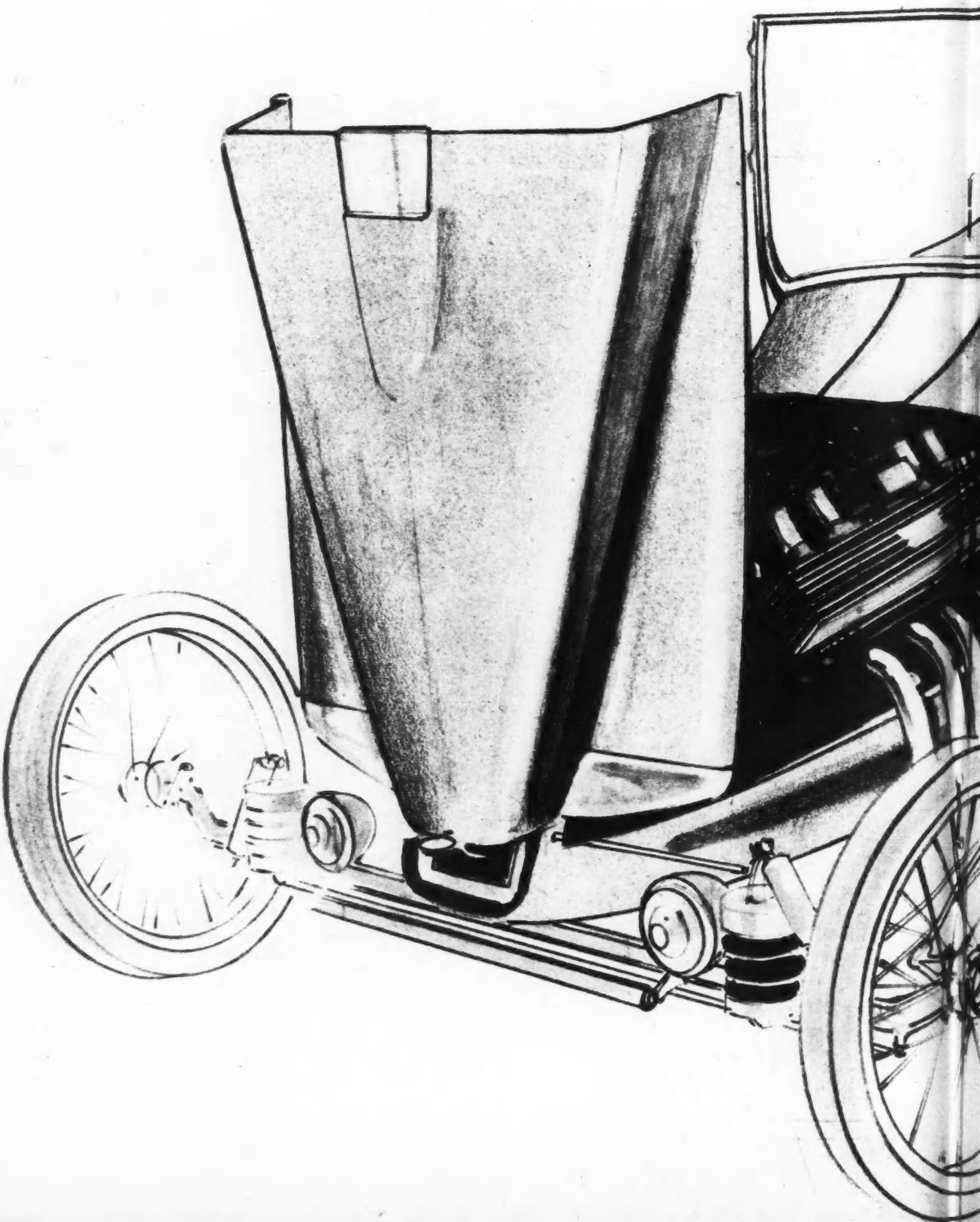
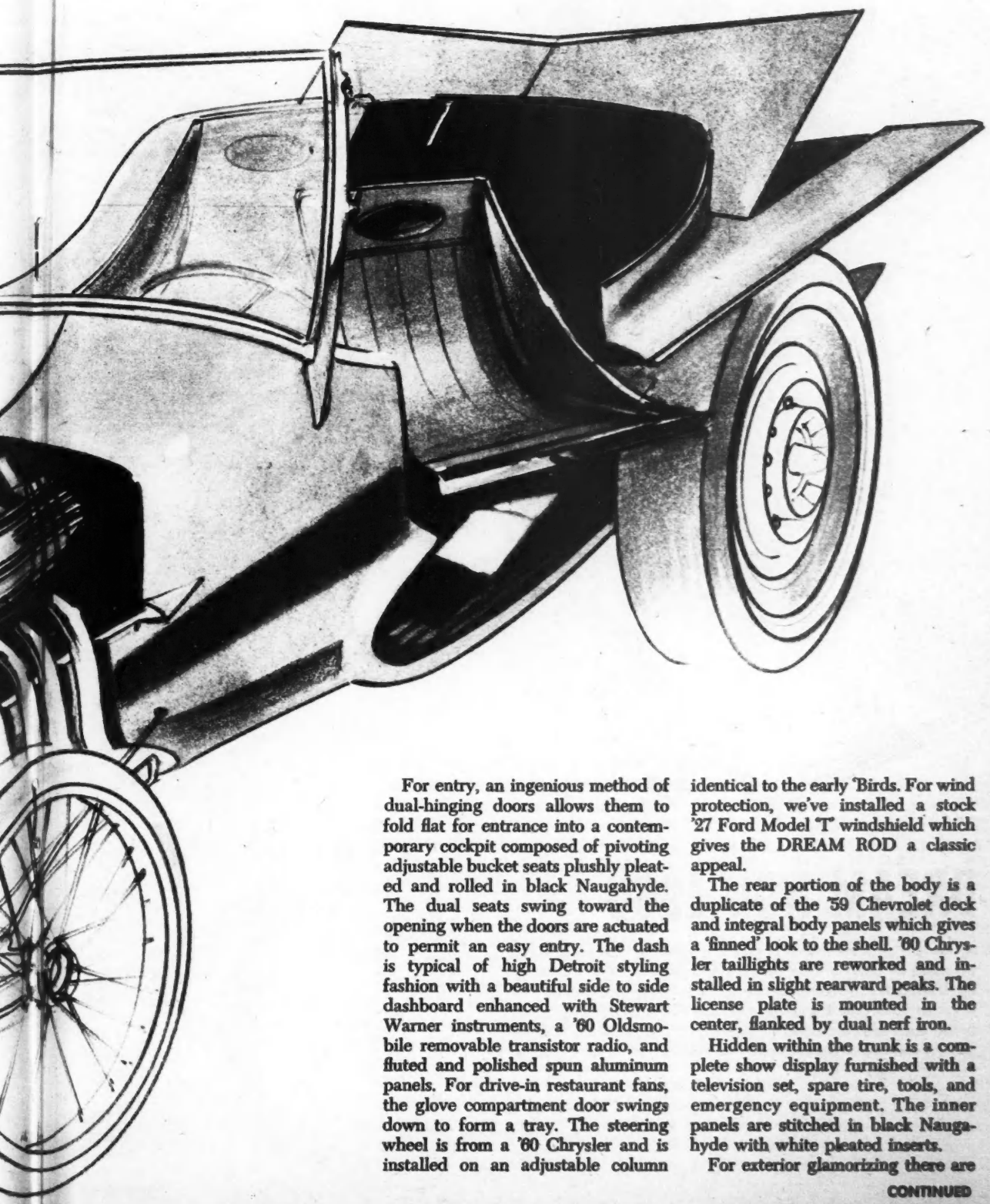
DREAM ROD 1960





For entry, an ingenious method of dual-hinging doors allows them to fold flat for entrance into a contemporary cockpit composed of pivoting adjustable bucket seats plushly pleated and rolled in black Naugahyde. The dual seats swing toward the opening when the doors are actuated to permit an easy entry. The dash is typical of high Detroit styling fashion with a beautiful side to side dashboard enhanced with Stewart Warner instruments, a '60 Oldsmobile removable transistor radio, and fluted and polished spun aluminum panels. For drive-in restaurant fans, the glove compartment door swings down to form a tray. The steering wheel is from a '60 Chrysler and is installed on an adjustable column identical to the early 'Birds. For wind protection, we've installed a stock '27 Ford Model 'T' windshield which gives the DREAM ROD a classic appeal.

The rear portion of the body is a duplicate of the '59 Chevrolet deck and integral body panels which gives a 'finned' look to the shell. '60 Chrysler taillights are reworked and installed in slight rearward peaks. The license plate is mounted in the center, flanked by dual nerf iron.

Hidden within the trunk is a complete show display furnished with a television set, spare tire, tools, and emergency equipment. The inner panels are stitched in black Naugahyde with white pleated inserts.

For exterior glamorizing there are

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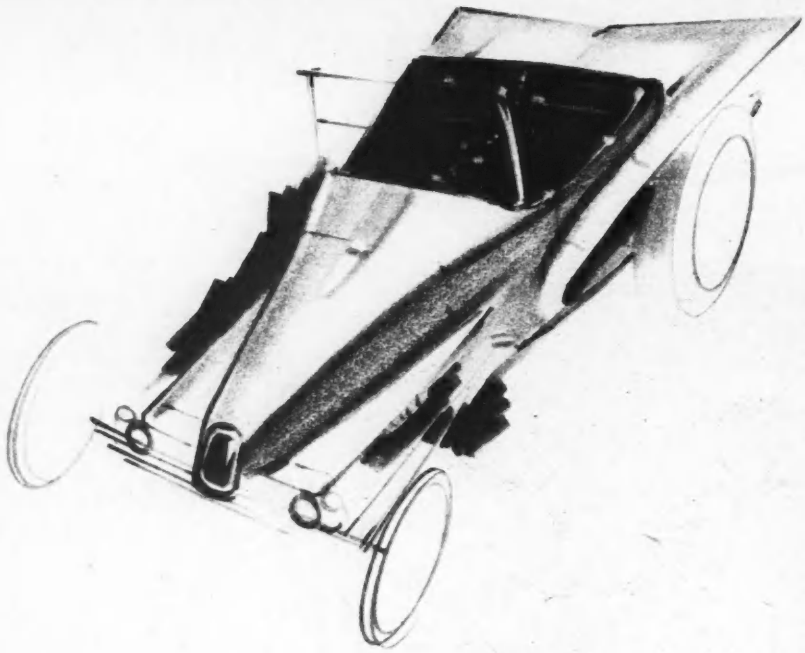
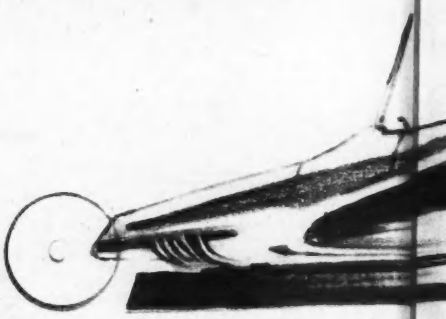
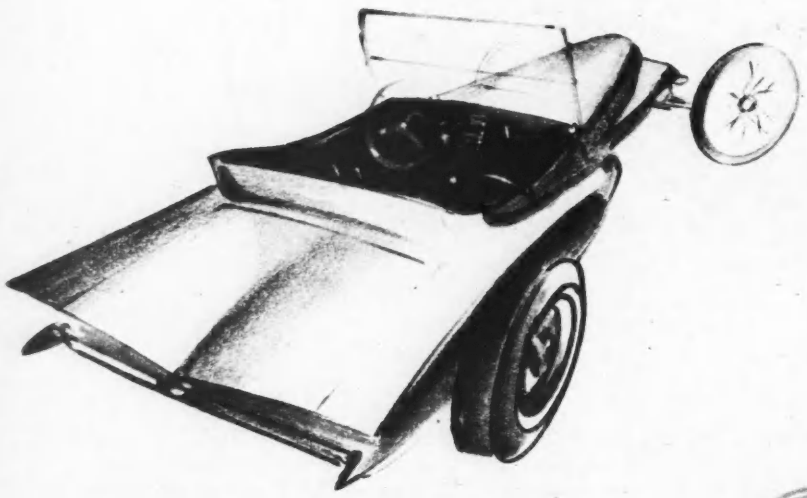
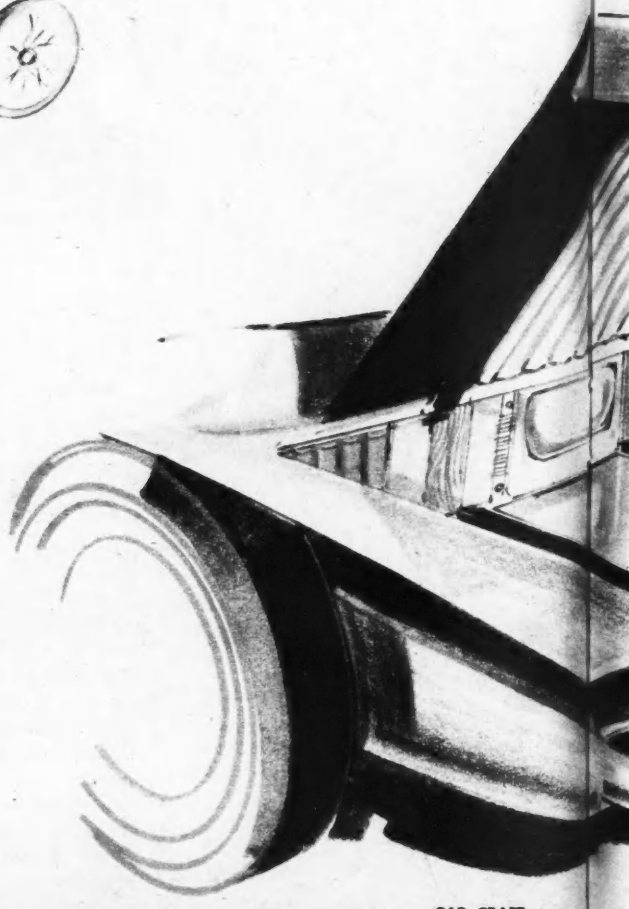




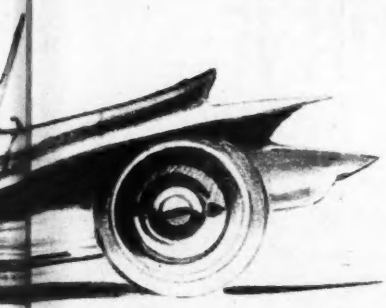
a multitude of colors to choose from. If best results are desired, we suggest you finish the DREAM ROD 1960 in either a Translucent or Candy paint application. There are also a few sculptured areas that are ideal for fluted aluminum paneling or, perhaps simply a contrasting paint motif.

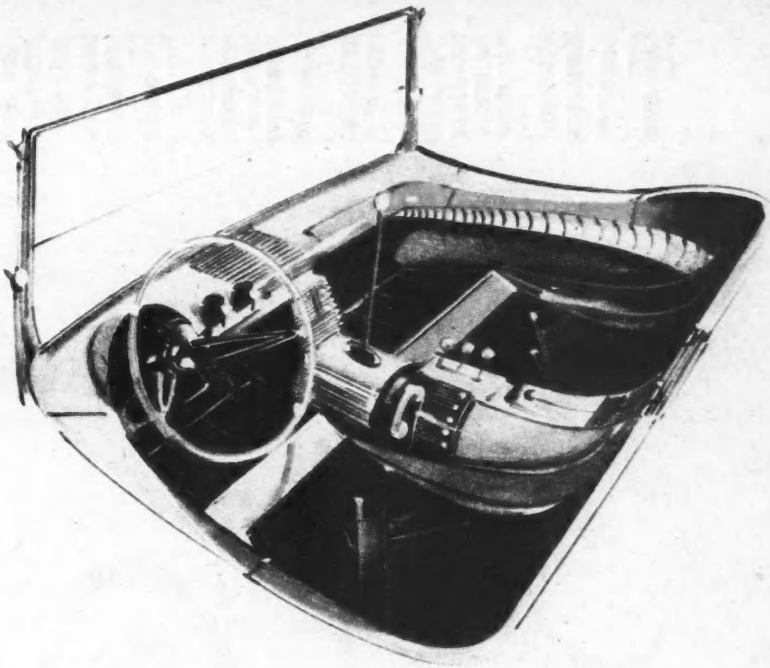




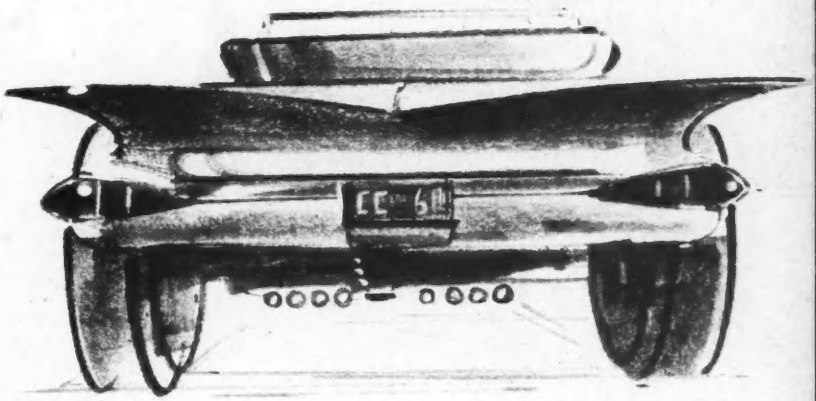
DREAM ROD 1960

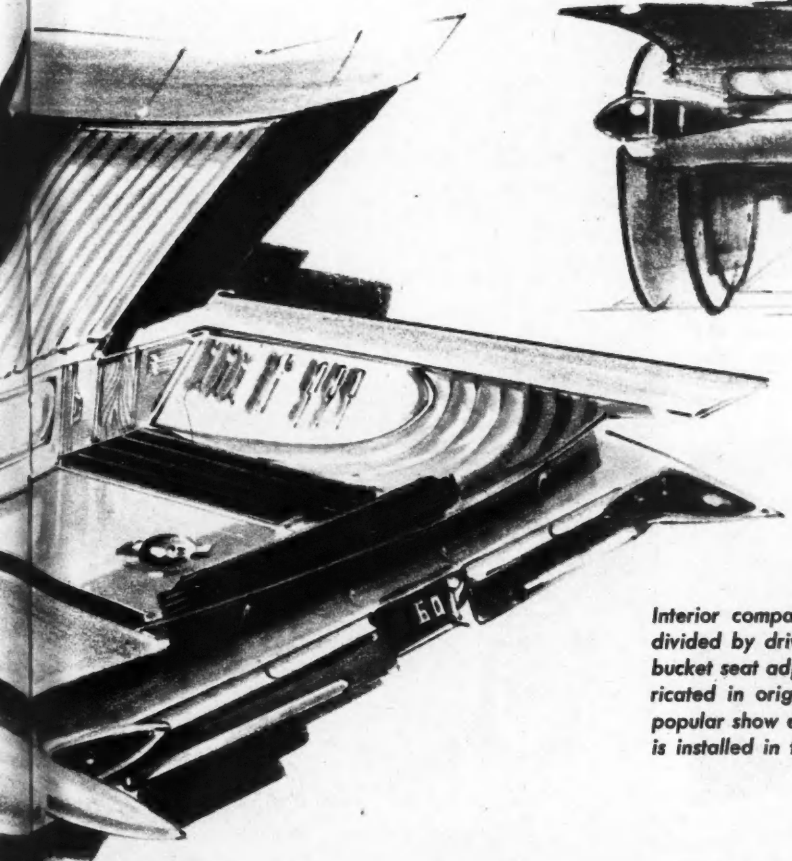
A wedge or dart shape is formed with the fiberglass body mounted on chrome moly frame. The duplicate '59 Chevy trunk lid is used for semi-fenders on rear, emanate from sculptured area on cowl. Small sponson-type fins are employed up front, house four square-shaped headlamps. Hood section is narrow yet wide enough for installation of lightweight, small Corvette.





Small details are always important on any automobile be it custom or rod. We're leaving most of these minute decorations up to you. We do, however, desire the use of the classic and hard-to-find early Ford radiator cap. It's a fitting addition and finish to DREAM ROD 1960.



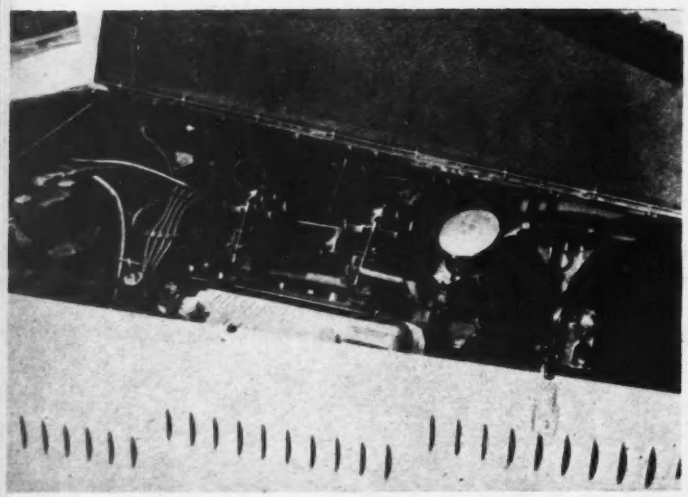


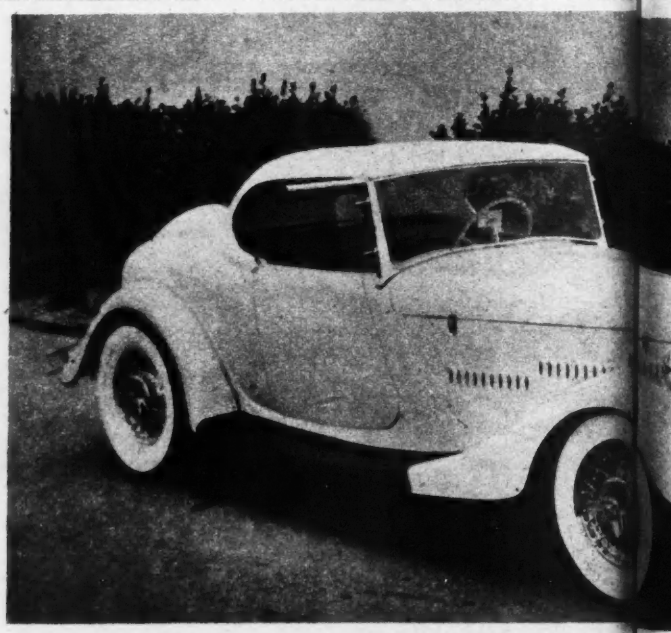
Interior compartments are detailed to fine extent. Cockpit is divided by driveshaft/trans housing. Three levers on trans are bucket seat adjustment, hood, trunk openers. Dashboard is fabricated in original fiberglass mold. Trunk is complete with all popular show equipment; gas filler spout has knock-off cap and is installed in floor of trunk. Note extensive use of upholstery.

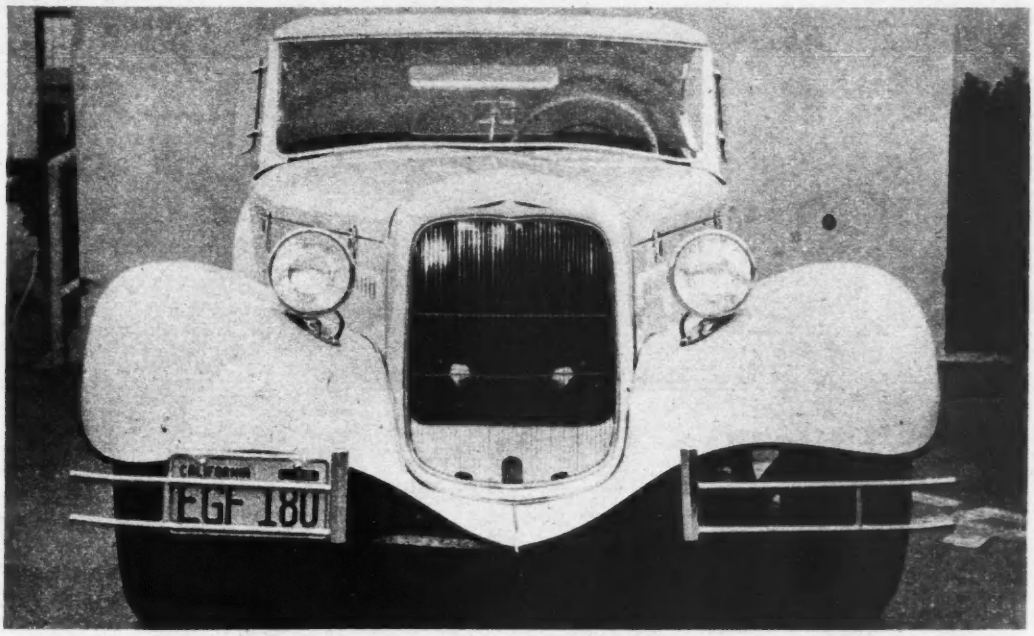
TAILOR-MADE-THIRTY-FOUR

Bill Smith wanted a roadster— so he took his Ford sedan and...

Powerplant is a '53 Oldsmobile engine with four carbs, Isky cam, Mallory ignition, 4" bore, competition pistons. Drive is transmitted through '53 Olds trans. to '50 Olds rearend.

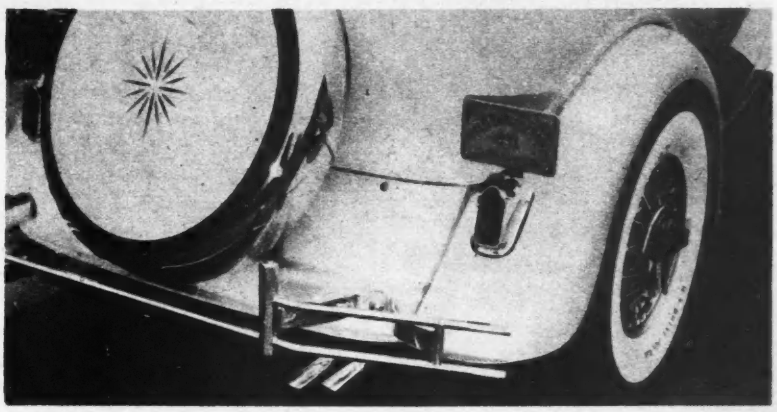


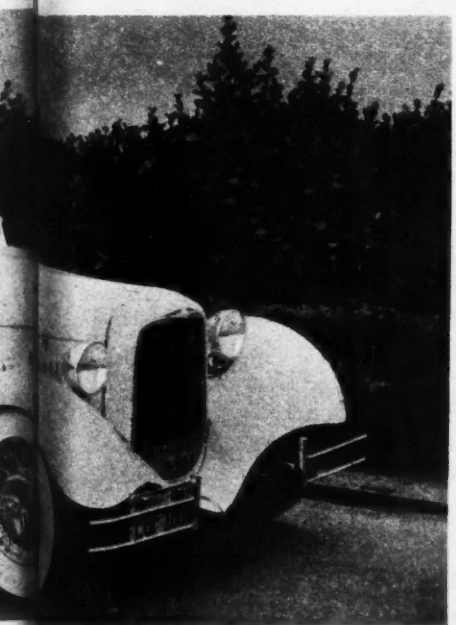




Bill Smith's Orchid hued '34 Ford rod from Alameda, California started life originally as a sedan. Decapitated, the old top forms deck lid, padded top.

BELOW • Graceful, smooth flowing lines are accomplished by sectioning; hood has new side panels, neatly louvered. Sparkling wire wheels are handmade.





TOP • Front end of the '34 is reworked to accommodate deuce grille shell. Nerf iron is constructed of hex steel. New axle, tube crossmember, lower roadster.

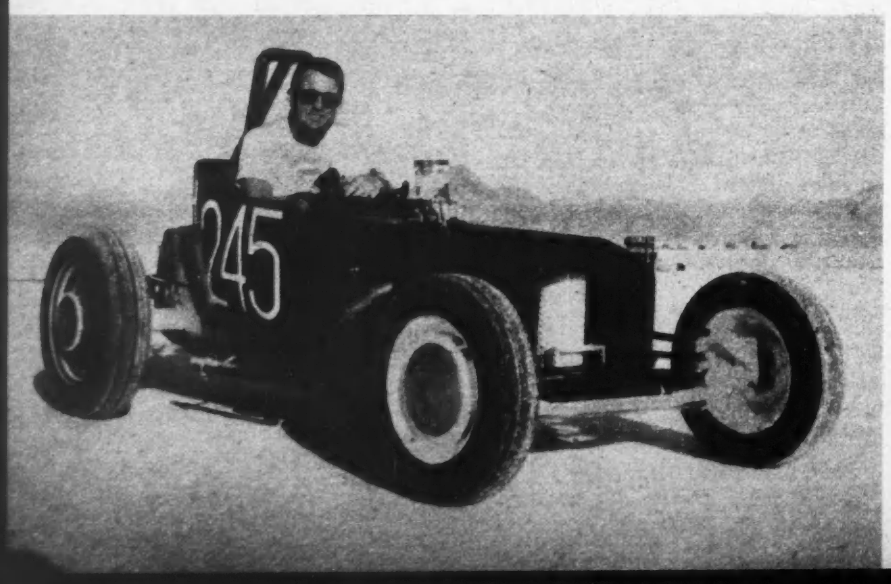
CENTER • Abruptness of rear end is eased by addition of Continental spare; taillights are 'cycle units. Exhaust tips lead from custom made header system.

RIGHT • Interior is completely rebuilt and upholstered by Gil Britto of Hayward, California. Motif is blue, white pleated/rolled Naugahyde. Note shift.

Photos by Frank Faraone

George Butler's Crosley-powered miniature "T"— a Bonneville roadster built—

JUST FOR KICKS



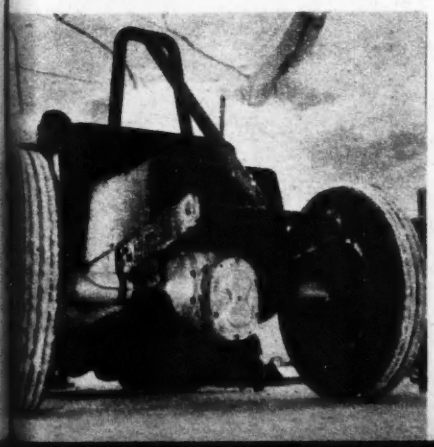
***ABOVE** • Making carb change in the pits at Bonneville is George Butler, San Bernardino, Cal., hot-rodder, dad looks on. Building rods for 20 years, team designed this stormer just for kicks.*

***LEFT** • George takes up full cockpit of fiberglass T roadster. Hood is aluminum. Shortened frame is from a '27 "T". Mildly souped Crosley mill pushed car to a clocked speed of 73 mph on salt.*

BELOW • *Full belly pan streamlines underside of the Butler "T", vents allow fuel and oil fumes to escape. Sturdy roll bar is regulation full height, affording sufficient driver protection. Wheels are Crosley 12" at front, Ford 16" rear.*

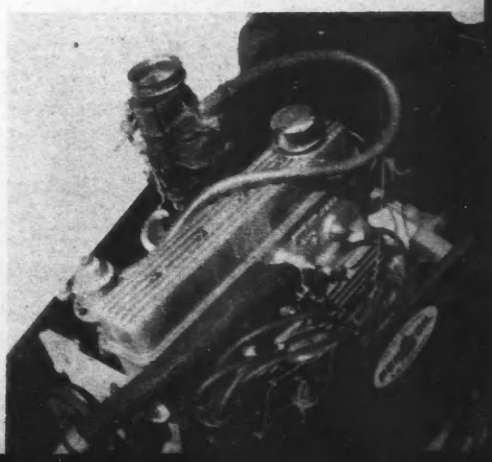
ABOVE • *Steering is from '51 Crosley, switched by Butler to center steering due to narrow seating. "Suicide" front suspended axle is '51 Crosley. Black roadster was under construction for 8 months, cost but $350 to build. A member of the Hornets of Redlands, George has owned two roadsters, also a dragster.*

Photos by Bud Lang



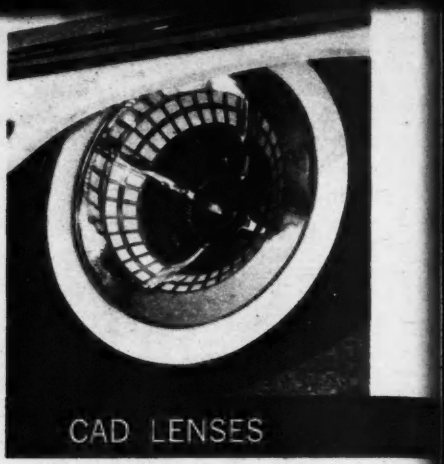
LEFT • *Ford rear axle setup runs Cyclone aluminum center section quick-change, mounted solid to "T" frame. Stock Ford hydraulic brakes used at rear. 45" tread, wheelbase 80 inches.*

RIGHT • *Powerplant for glass roadster is '51 Crosley, displacing 45 inches. Isky 9000 cam feeds through Ford carb, Braji manifold. Wico magneto provides spark, the exhaust headers are Butlers.*



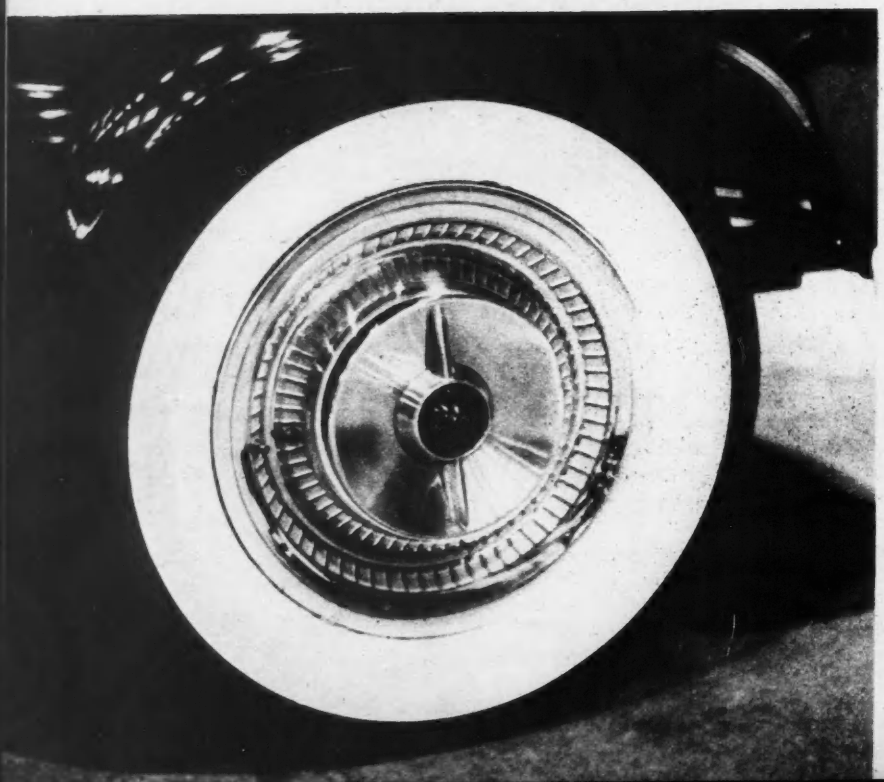
here's how:

Taillight lenses on hubcaps—a novel gimmick for accenting wheel covers

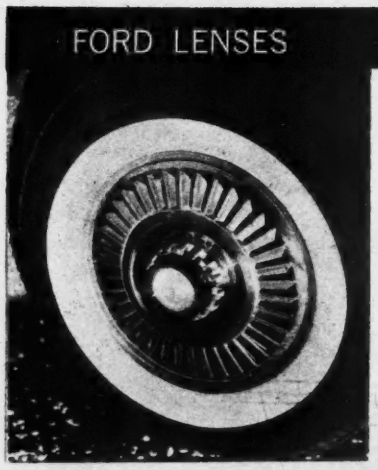


CAD LENSES

ATTRACTIVE HUBCAPS, customized to display a bit of the car owner's imagination, are always noticed by others as your custom rolls down the road, sunlight flickering off the chrome. These small and seemingly unimportant wheel discs can easily be converted to add glamour to your car by making a few simple changes. In the past many car owners would use hubcaps from another make of car or utilize only spinners or emblems from one cap on another. Lately the trend has been to installing decorative chrome or brass kitchen type knobs and handles in a variety of patterns. One of the latest styling trends rapidly becoming popular is the use of late model taillight or parking light lenses on hubcaps. Sensing this, CAR CRAFT brings its readers a glimpse of some of these combinations and a photo illustration on how to accomplish this eye-catching custom treatment. The first installation deals with installing '59 Cad taillights on '58 Edsel caps, the second with beautifying the '59 Ford caps with '56 Ford lenses.



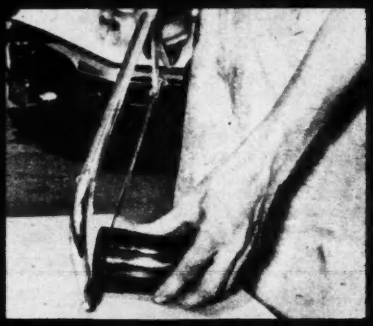
FORD LENSES



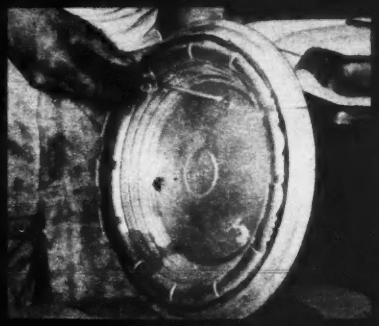
Remove tripod ornament from Edsel cap as first step to installing Cad lens.

Insert Cad lens into Edsel tripod, replace in-position on cap, measure gap.

Remove lens and mark off the excessive length with tape and scribe for cutting.

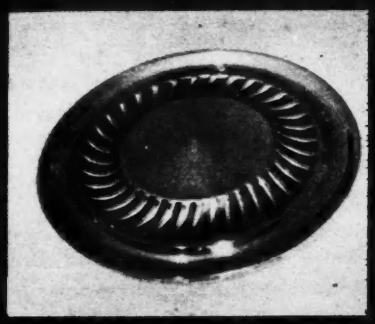


Using a hacksaw, cut off the bottom of Cad lens, being careful to cut evenly.



Replace lens in tripod, install them on cap and secure with three screws.

Finished wheel disc takes on entirely new look with clever addition of lens.



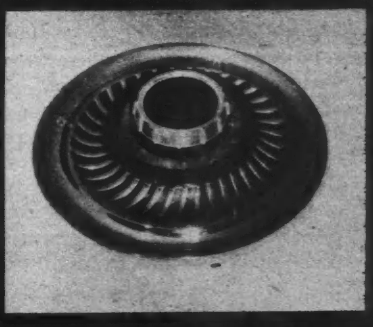
Truthfully, not too much can be said for this stock '59 Ford wheel cover.

So we'll center a '56 Ford taillight lens on it and mark the mounting holes.

Using a center punch and light hammer, indent the three small attaching holes.

With an 11/64th inch drill, bore out the attaching holes for mounting Ford lens.

Utilizing countersunk metal screws, replace lens and tighten it into place.



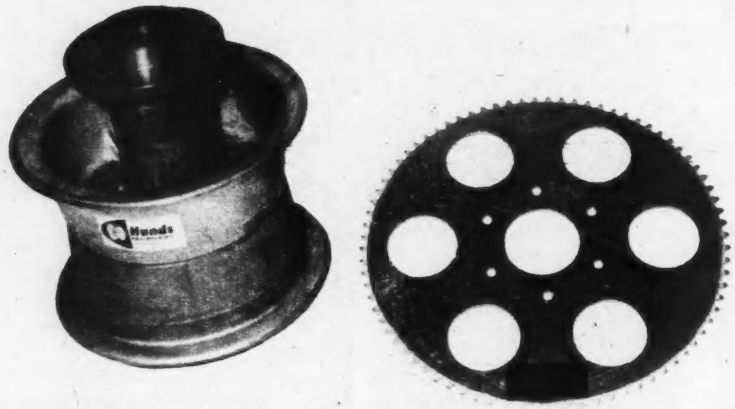
Completed unit is totally different from initial disc, a worthwhile change.

SPROCKETS

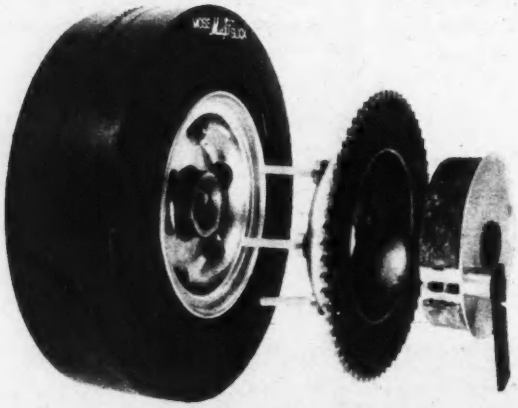
New designs offer quick and varied gear selection

By Bud Lang

SPROCKETS! SPROCKETS! And more sprockets. A very popular item on the scene today are the lightweight aluminum sprockets being offered by a few of the kart product manufacturers. More important than just a saving in weight or improved looks, these sprockets allow the kart owners to change ratios with ease, thereby giving a variety of engine-sprocket ratios suitable for all courses. One particular model that is bound to show great popularity with karters, is a new split design sprocket, available in different sizes, that allows itself to be slipped over the axle and secured to the magnesium hub without removing the wheel. This will be particularly valuable where two or three engines are in use. Of course the contemporary type sprocket still has its place in karting. These are of steel, being welded to the kart's brake drum, and allow a change of sprockets simply by pulling the wheel and changing the drum. On these pages are many of the different type sprocket assemblies available today and informative photographs on how to install them.

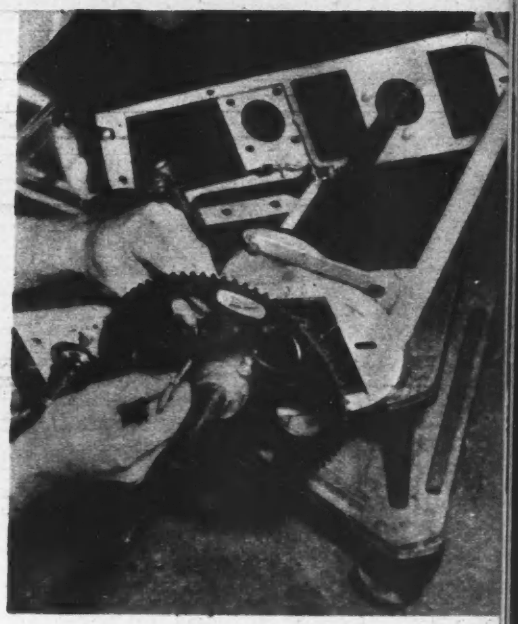


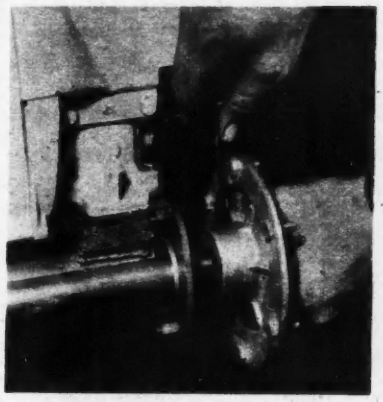
ABOVE • Big widebase Percival "Hellcat" wheel comes in 6" size, features integral hub and sprocket flange. Made in aluminum or magnesium, permits fast change. BELOW • Moss assembly consists of an interchangeable sprocket-brake drum unit, expanding brake removes easily. Sprocket combo is constructed of steel.



LEFT • Installation of Webco's quick change hub is a relatively simple chore, requiring a minimum of tools. After removing wheel, aluminum hub and axle key are slipped into place, two steel allen screws holding them in place. Designed for a live axle set-up, they can be easily switched to dead axles.

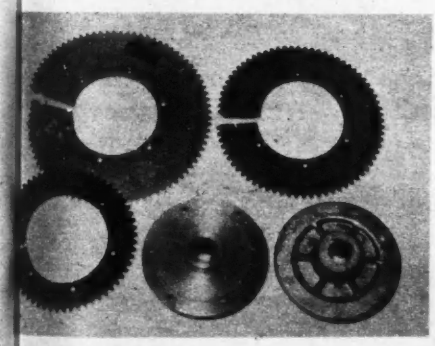
RIGHT • Ultra-light aluminum sprocket is then bolted to hub, chain installed, wheel replaced. Webco produces these sprockets in various sizes enabling cart owners to change ratios in a matter of minutes at little cost, all are designed for high R.P.M., long wear.



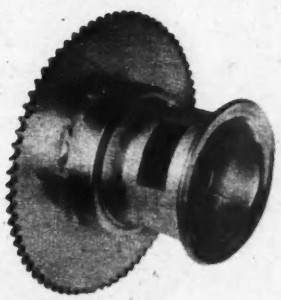


At left a 6" Hands Engineering magnesium sprocket flange is secured to the axle by two 5/16" Allen screws after removal of wheel. Quick-change sprocket can be changed even with wheel in place as seen in the center photo. Installation of chain is last step. Aluminum sprockets are available in all popular tooth sizes, are time-savers.

In 3 sizes, cut aluminum sprockets are shown opened up, are flush when used with magnesium hub, both sides shown.

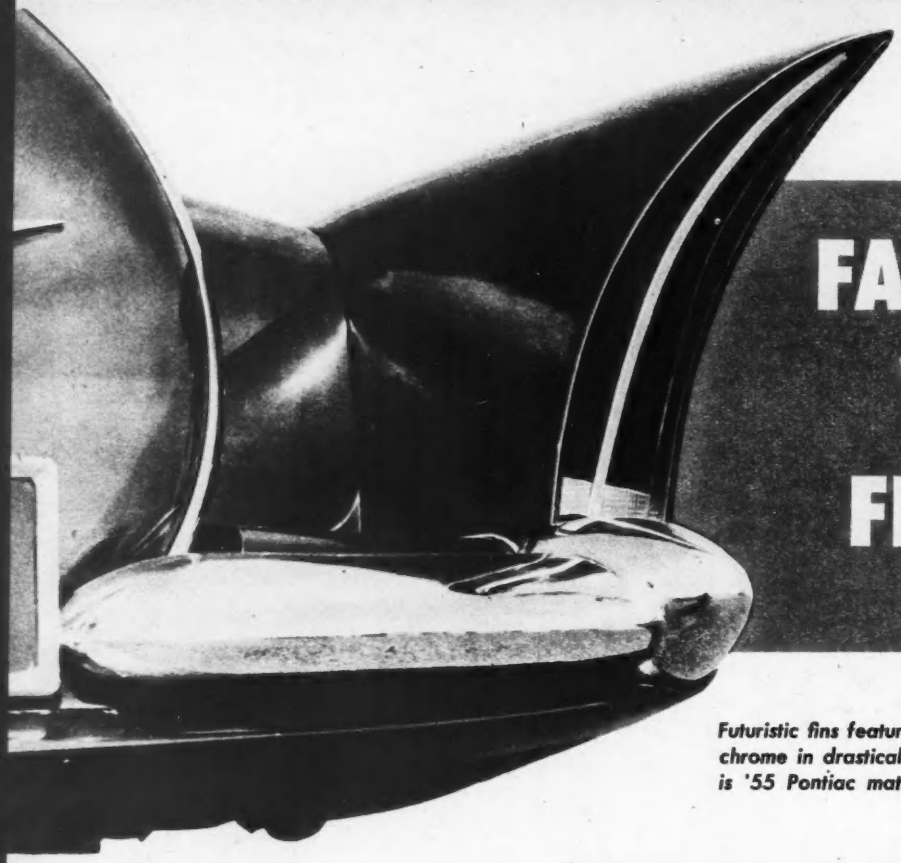


Bug Engineering has a 4" aluminum drive wheel with integral hub, mates with brake drum welded to sprocket.

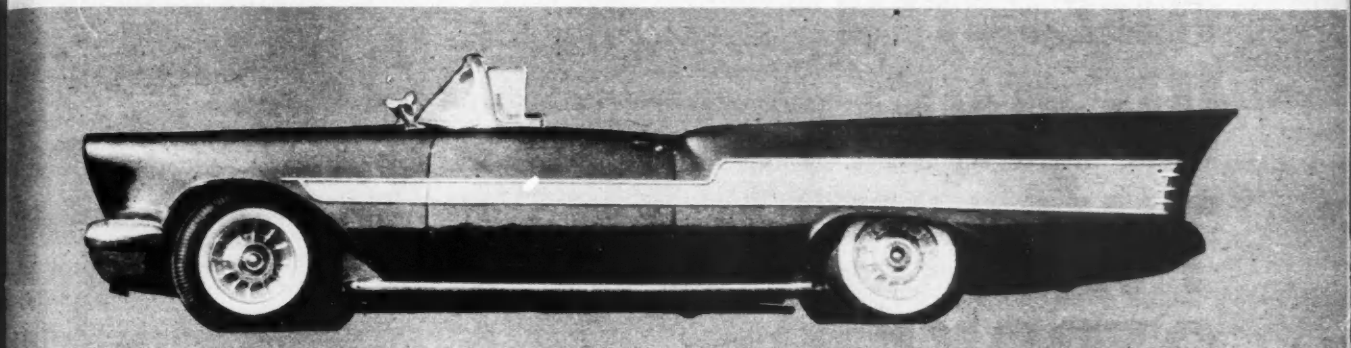


Steel brake drum can be welded to any size steel sprocket, fits Bug 4" wheel, Hands 6" wheels. Offers flexibility.

FASHIONED WITH FINS



Futuristic fins feature red lucite lenses with dividing trim of chrome in drastically reworked fenders. Bumper end piece is '55 Pontiac mated to Buick bullet. Rear pan is rolled.

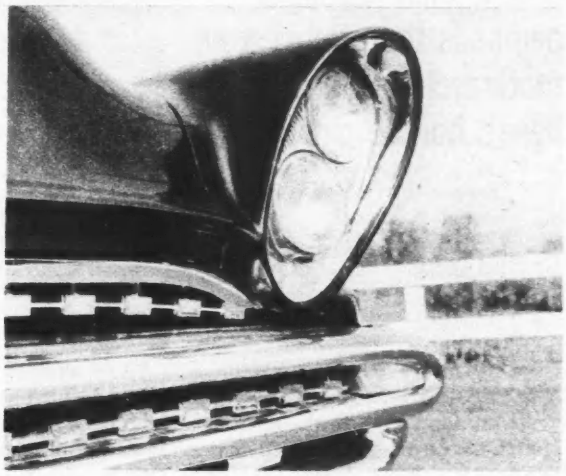


Anthony Abato of Jersey City, N. J., is owner and builder of this space-styled '54 Oldsmobile convertible. Both front and rear fenders are greatly extended; side trim is constructed of ½ round rod section surrounding stainless steel insert.

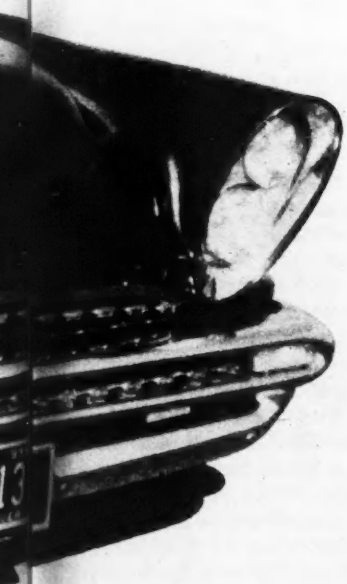
RIGHT • Classy quad headlight installation utilizes popular Lincoln assembly; unit is canted in extended fenders. Note portions of Buick checkered grille in DeSoto bumper/grille.

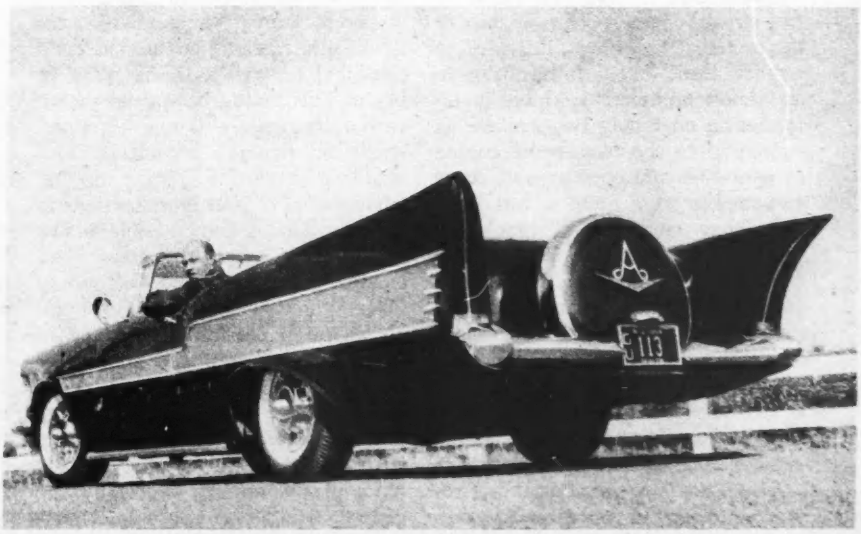
LEFT • 22 coats of Maroon lacquer grace Olds body. Hood is nosed; interior is stitched in orange and white Dacron by Caravan Upholstery, Jersey City. Car took 3 months.

Caddy wheel discs are run with center mounted bullets. Added length to rear section allows mounting of Continental kit. Rear portion of body was handmade of sheet metal.



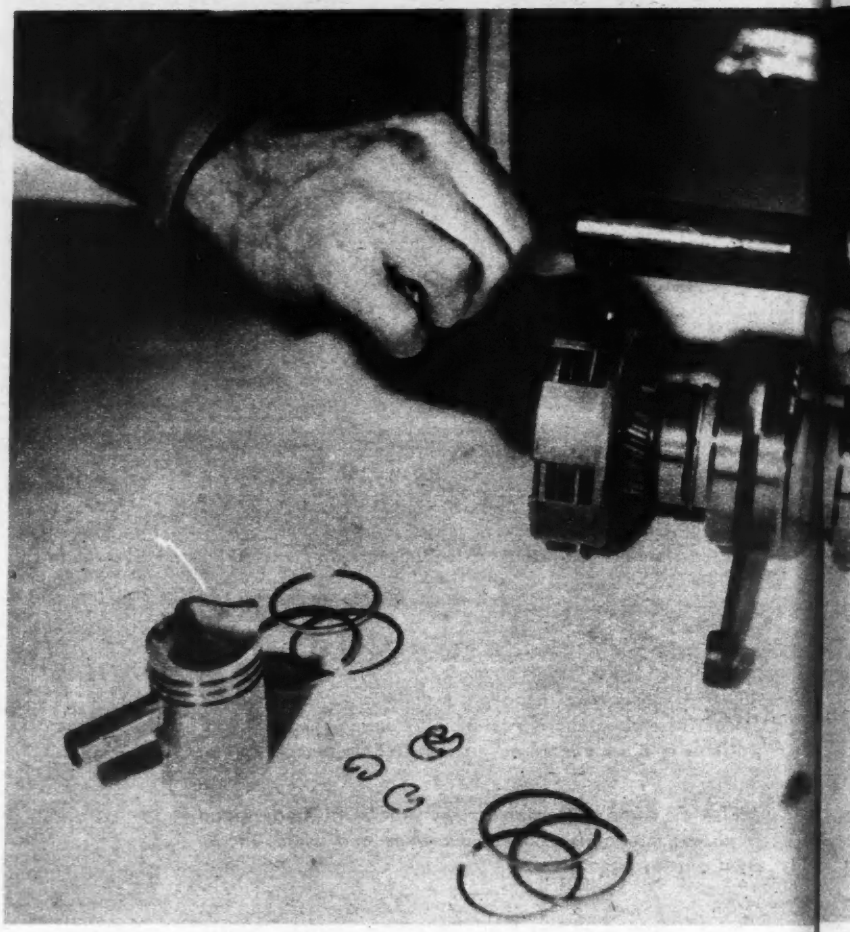
Photos by George Barris





HOPPING UP THE TWO-STROKE

Competition karting demands the utmost from motorcycle engines–here's how to get it

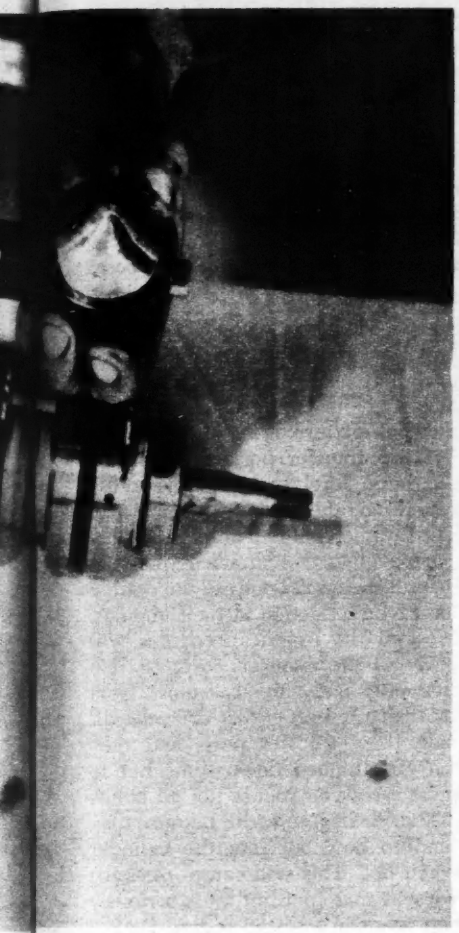


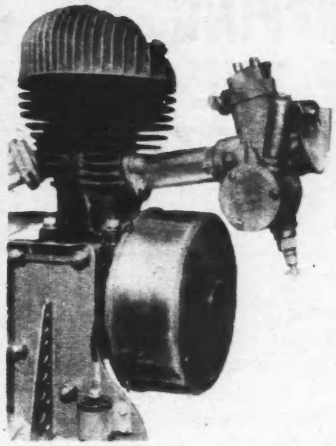
By Bud Lang

WHEREAS MOST READERS are familiar with the workings of four-stroke engines due to being exposed to them frequently, the opposite can be said in regards to two-stroke engines. This is due to the fact that few have attempted to modify these engines, resulting in an almost complete voidness of information on racing two-strokes. As compared to the four-stroke engine in operation and construction, these two-strokes vary quite a bit. Basically they consist of a crankcase, barrel, crank with piston, rod and the ever important ignition. Just a few holes in the cylinder wall for breathing, no cam or valves to monkey with, no oil pump nor pan. One of the most important features of a two-stroke engine, and the one that makes it go or whoa, is the critical port pattern and timing.

There are very few parts a two-stroke owner can purchase as compared to his four-stroke brethren, so modification of stock parts or machining of new ones is the order of the day if more power and speed is desired. A summary of alterations necessary to convert a standard two-stroke into a racing engine has been compiled to give us some place to begin. This listing is: special racing carburetor with a larger bore and separate, flexibly mounted float chamber, alteration of port timing, enlargement of port cross sections in cylinder barrel and crankcase volume, raising of compression ratio combined with the use of racing fuels, alteration of combustion chamber shape, if possible a larger cylinder head with improved finning for better heat dissipation, finned light alloy cylinder jacket fitted to upper part of barrel for improved cooling, reduction of weight of reciprocating parts of the engine, especially the piston, wrist pin, rings, and connecting rod interconnected with the new balance of the crankshaft assembly, reduction of weight of further rotating parts as flywheels, clutch, etc., a racing magneto and last but not least the complete alteration of the exhaust pipe system.

In order to develop high power we have to pass through the engine all the air, particularly all the oxygen, we can, and see that a sufficient amount of fuel is supplied to burn with the oxygen. Our starting point will be at the carburetor, which must be big enough to pass all the air and fuel required. As a rule the faster an engine revs, the larger a carburetor is essential. The large carb bore will effect a faster oscillation of the inlet charge. Through the bigger carb hole more charge is drawn into the crankcase faster as there is less flow resistance. When a larger carburetor is fitted, the first observation will be that of a "lame" engine. This





Perhaps one of the most important steps in modifying a two-stroke, next to port pattern and timing, is balancing the exhaust and carburetor for a ram effect. Carburetor manifold length varies with length of exhaust as in illustration.

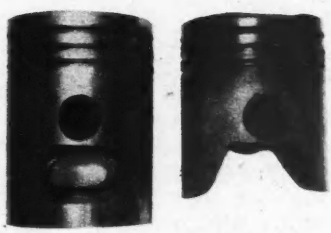
fault can easily be remedied by employing a calculated longer inlet stub.

22 and 24 millimeter size carburetors have proven very successful when used on 3, 5 and 7 cubic inch engines. For engines in the 15 cubic inch class one can use two 26 or 28 mm. carburetors or in the case of a single 15 cubic inch, a 30 mm. carb can be very effective. Better acceleration can be obtained though by using a millimeter smaller in each case. Size of the race course would have a bearing on carb choice also as each course differs in characteristics and puts a different demand on all engines.

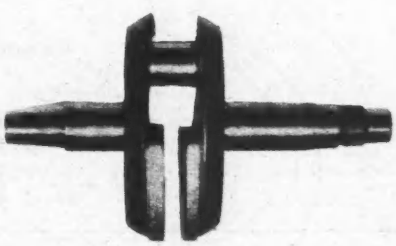
In tuning a carburetor to your engine, bear in mind that if you hear a bubbling effect from your engine at top speed, you must reduce your jet size. If your engine runs clean on top end but bubbles over at low and intermediate speeds, you must lower the needle of your carburetor slide. I may add that this applies to the Italian Del Lorto, English Amal and Japanese Amal carburetors. If an attempt is made to run too large of a jet the result will be a strangled engine and loss of speed. With the 3, 5 or 7 cubic inch engines with 18, 20, 22 and 24 mm. carburetors the jetting is around #70 to #95. This applies to modified engines. If you switch to fuel then the jets must be drilled out to between .038 and .058-inch. Running fuel in a normal gasoline carb requires extensive modification due to the volume necessary for performance. Unless you are one of the fortunate ones who understand fuel burning it is best to have this modification completed by a competent mechanic.

All of the modifications brought out in this story pertain generally to gas burning motorcycle engines. Fuel burners are in a class of their own so little will be said about them.

Crankcase volume plays a very important part in determining how much power or higher revolutions is obtainable from an engine. The rising piston creates a vacuum in the crankcase, which is compensated by the outside air through the carburetor when the inlet port opens. The piston with its constant stroke volume can create a higher or lower vacuum, which depends on the air volume of the crankcase, which is called "detrimental space". If a crankcase is very spacious, has instead of circular webs, a T type crankshaft assembly, as in the case of the Villiers engines, it has a very large detrimental space. Reduction of this detrimental space can be



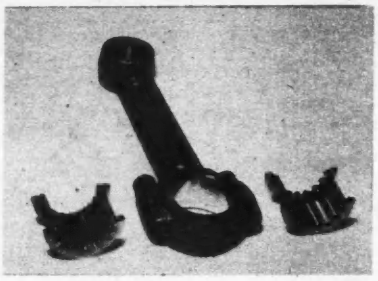
In contrast to stock Zundapp piston, modified one has skirt shortened, the window opened up for better breathing, plus change in transfer port timing.



Zundapp crank assembly features much favored 360° crank webs. Webco crank pads are added to decrease crankcase volume, reducing this detrimental space.

CONTINUED

HOPPING UP THE TWO-STROKE



Split rod bearing retainers at left are from a Zundapp two-stroke. Use of needle bearings distributes the load over large area, cuts down on friction.

RIGHT • T-type crank is stock Villiers, modified Villiers is converted into a full circular web type. Webs can be enlarged, new ones constructed as here.

achieved by filling in parts of the crankcase, addition of crank pads such as produced by Webco, or building up the T type crank counterweights or flywheels, to a full 360° circle.

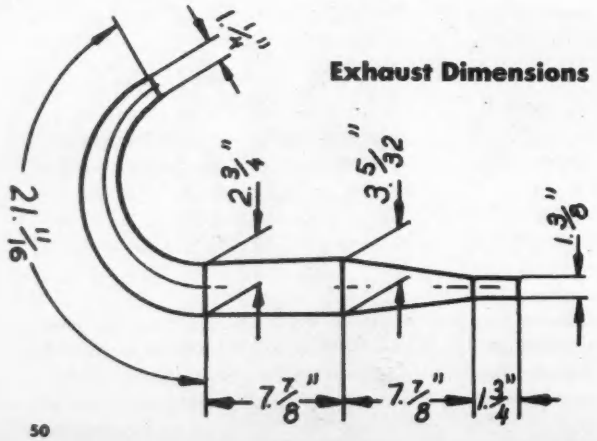
In a piston controlled ported engine the port pattern is symmetrical. That is: when a port opens at a given degree on one side it will close at the same degree on the other side, as far as one cycle is concerned. When one attempts to change the shape of a stock port to permit the engine to breathe easier and better, it's possible to actually help your engine in one respect and hurt it terribly in another. An example is when a port is enlarged vertically along the cylinder wall the port timing is changed, and with the two-stroke when a change occurs at one end, it is felt at the other similarly.

There are many porting patterns for racing two-stroke engines, but many builders will agree that Mr. Henry Meier's figures are about the best. One of the foremost two-stroke builders and tuners in Europe, Meier times his porting as follows: Exhaust opens at 80° BBDC, Transfer opens 70° BBDC, Inlet closes 76° ATDC. This gives the following timing pattern which is the result of many years of racing experience with various two-strokes, so one cannot go wrong using these figures. Exhaust is open for 160°, transfer is open 140° and the inlet port is open for 152°.

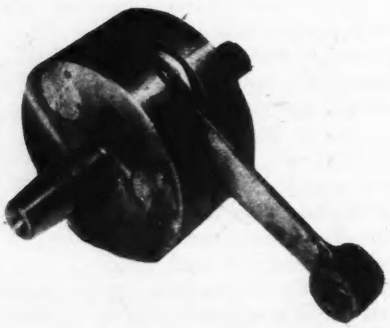
Practically all porting can be opened up .100 inch around the circumference of the cylinder and still be safe. Also in engines having round drilled ports, these may be squared up to permit more gas flow. It is suggested that at least .032 radius be left in the corners to prevent any cracks or splits. Transfer ports have a pronounced angular design at the entrance into the cylinder, intended to be this way so as to direct the loop by which the gas flows into the cylinder. Modification of this angle is generally disasterous, but it should be polished to a very smooth finish as well as the interior of the ports which are generally rough due to casting. All passages should have very smooth contours and finish. It should be mentioned that in racing engines the air speeds in both inlet and transfer ports reach figures as high as 860 mph. So you can see how important it is to have smooth direct ports, any change in direction means a loss in power due to eddying of the fuel mixture.

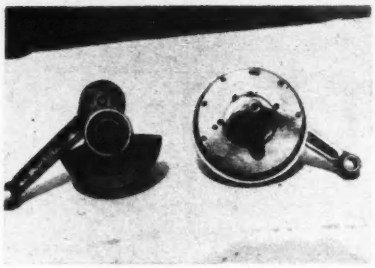
These transfer ports must be on the same level and directly across from each other and of the same size. This applies only to foreign motorcycle engines though, since American manufacturers do not use the double loop type induction in their engines. Most of the American engines will have all the transfer ports on one side only and directly across from the exhaust port. Posts or webs divide these transfer ports and they may be thinned down some but in most cases you should not go below .093 or 3⁄32-inch in width because they tend to bow out into the cylinder when hot. This will cause excessive wear at that spot but more seriously can result in a seized piston. Do not under any condition remove them entirely. If this is attempted, or if an individual port is opened up too much radially, the ring will expand out into this port on the first stroke and break, possibly leaving a useless cylinder and piston in its wake.

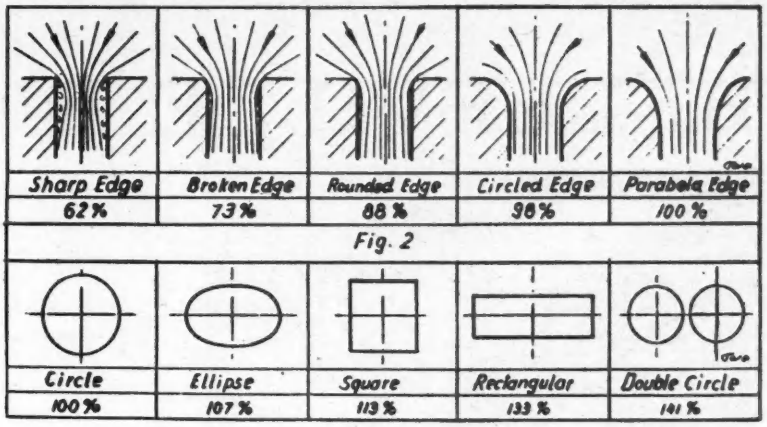
An exhaust system of correct dimensions is of the greatest importance for the proper functioning of two-strokes. These race-proven dimensions are unexcelled, taper provides ram effect to keep a larger fresh charge of fuel in the barrel.



Yamaha crank is designed with full circular webs, decreasing crankcase volume, allowing piston to create a higher vacuum on upward stroke and produces a higher pressure of the air-fuel charge in the crankcase. Thin rod allows larger webs.







RIGHT • Port design chart shows the efficiency of various shapes. Note how port edge shape controls flow pattern of fuel charge, an important feature.

When cleaning out the inlet port, open it up about 20% larger than the carburetor you intend to use. A word of caution should be given here. If a port is say 1 inch square, then grinding or filing 1/16 inch off each side will increase the size about 28% over the original 1 inch, whereas a 1 inch circle opened up 1/16 on the walls would be about 3/8th or 12% larger. The reason for making the inlet opening larger than the carb is so you can run a taper from the port to the carburetor and enhance the flow of the gases.

Compression ratios of a high degree may be used on the small bore engines. It is recommended that you stay within the 9 to 10½ to 1 range for good performance and long life. Some builders of Yamaha's and Maico's have gone as high as 14 to 1 compression ratio, but this does reduce the engines longevity. More important, it takes an engine with exceptional cooling qualities to withstand the temperatures built up by the added compression.

Boosting compression in the combustion chamber is relatively easy today as many manufacturers produce heads of various compression ratios. Maico, besides having higher compression heads, also offers a variety of thin gaskets for different ratios. If a ratio check is necessary in cases where the cylinder has been bored or the head milled, the cylinder head must be fitted with rings, and must be raised to top dead center. The head should be tightened securely. A burette tube is then filled with a very thin oil which is poured through the plug hole into the combustion chamber until the latter is filled to the bottom of the plug hole. A check of the cylinder volume with the piston at BDC, will give your final compression ratio.

Lubrication of the racing two-stroke engine is quite a problem. This lubricating business is rather difficult, at least for racing, as you are between the devil and the deep blue sea. At one side, you need as much oil as possible to insure proper lubrication of the big end, main bearings, piston and cylinder bore. On the other hand, a very oily charge is not desirable in the combustion chamber for it deducts from the performance and gives a very hot flame. A good vegetable oil is strongly recommended by Mr. Meier, as an additive to your fuel. In time, however, vegetable oil gums up an engine as it becomes a sticky hard deposit which is difficult to remove. Steen C chemical lubricant, a replacement for oil and additives in the fuel does not form sludge, gum or varnish and has been praised by many two-stroke pilots who have been using it in their karts since its advent.

The distance that the carburetor should be placed from the engine proper is subject to coordination with the exhaust system that you use. There appears to be two schools of thought on the type of exhaust system to use on motorcycle engines. One is the megaphone and the other the restrictor type pipe, this latter type we shall discuss later. When using a megaphone exhaust system generally the induction tube should be under four inches from the inlet port to the center of the carburetor slide. With the restrictor type exhaust system, most builders use induction tubes of around four to five inches long. Ordinarily, however, if a large carburetor is used you will have to run a bit longer induction tube.

Exhaust pipes offer one of the better fields of experimentation than any part of the engine other than porting. Many are the exponents of the megaphone theory but to be different we shall deal with the type system Henry Meier recommends, the restrictor type system, which has been proven to be just about the best for racing, being used on practically every racing two-stroke in Europe. Examination of the pipes on the M.Z. racing cycle, the DKW3 and Yamaha reveals that a certain type design is strongly adhered to. It is a megaphone with a reverse cone or cup on the end reducing the 3½ inch diameter of the megaphone to around ¾ or 1 inch final lead away pipe. Total length of the pipe should be around 34 inches. If you notice too much loss in acceleration with a pipe of this type you may have to reduce the 3½ inch diameter and the length. However, with a bit of experimentation a pipe of this type will produce in the neighborhood of 2 HP per cubic inch. If you insist upon using a megaphone try an 18 inch length with about a 3½ inch diameter on the end.

For your information, engines running the restrictor type exhausts and getting all this power are the East German M.Z. 7½ cubic inch two-stroke which produces 20-22 horsepower, their 15 incher puts out 28 to 42 HP. The Japanese Yamaha 7½ cubic inch produces 14-15 HP while the bigger 15 inch twin puts out 28-30 HP. These ratings come from fully modified racing engines, the new horsepower figures about double the stock ratings. These are examples of what can be done with the proper

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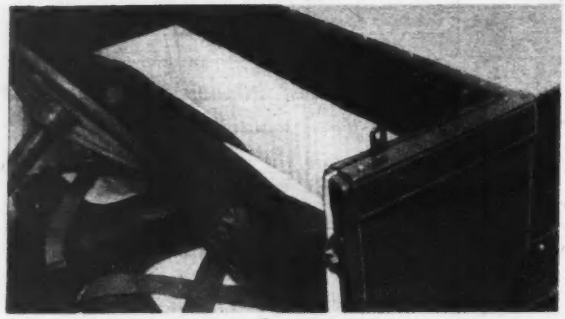
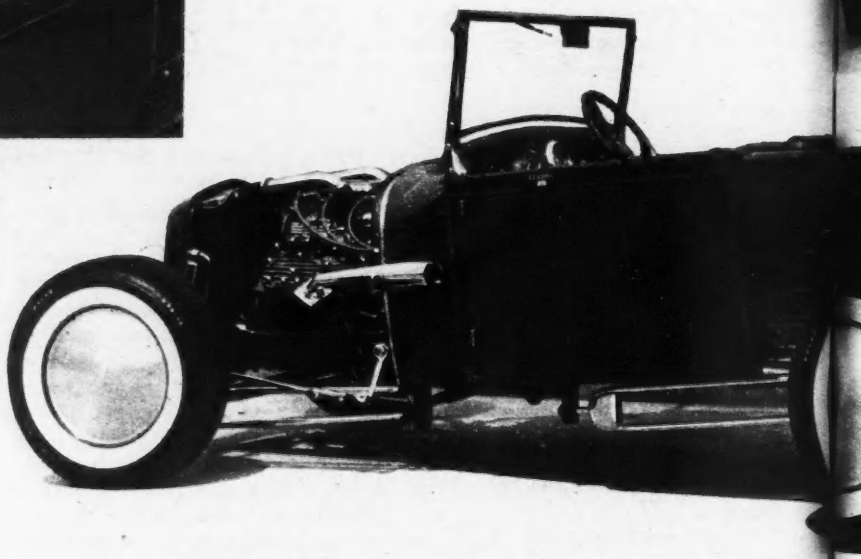
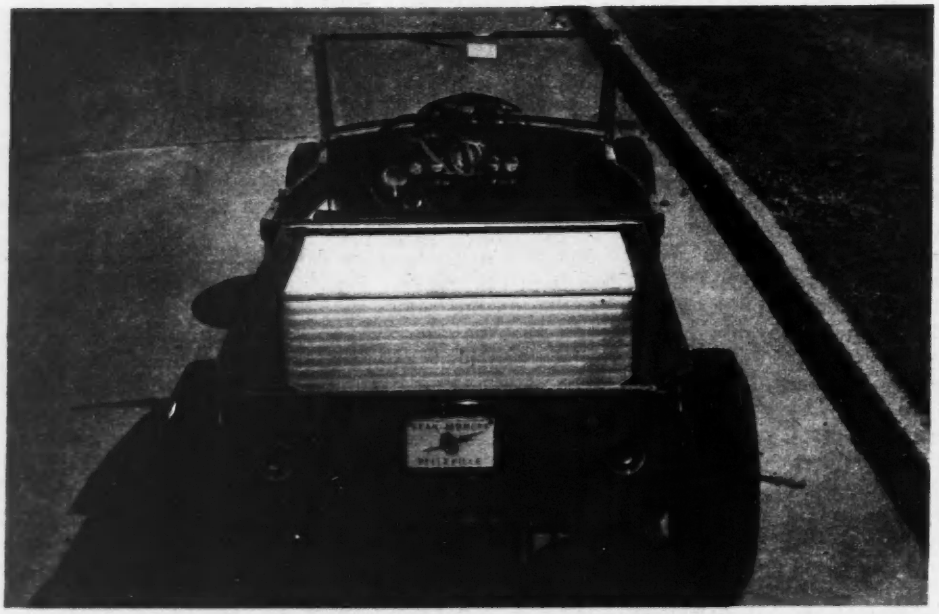
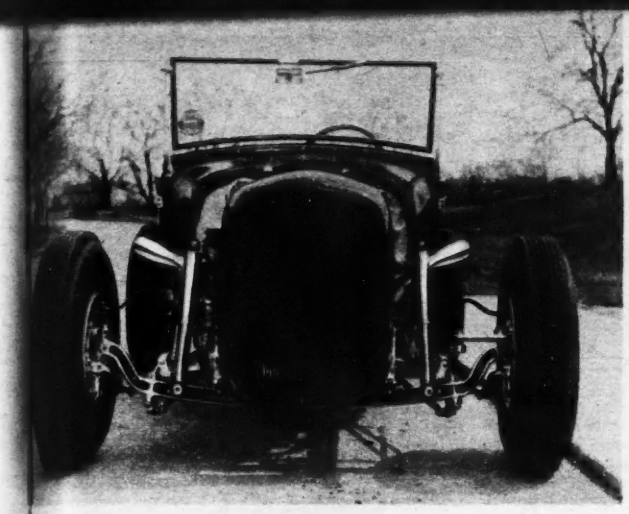


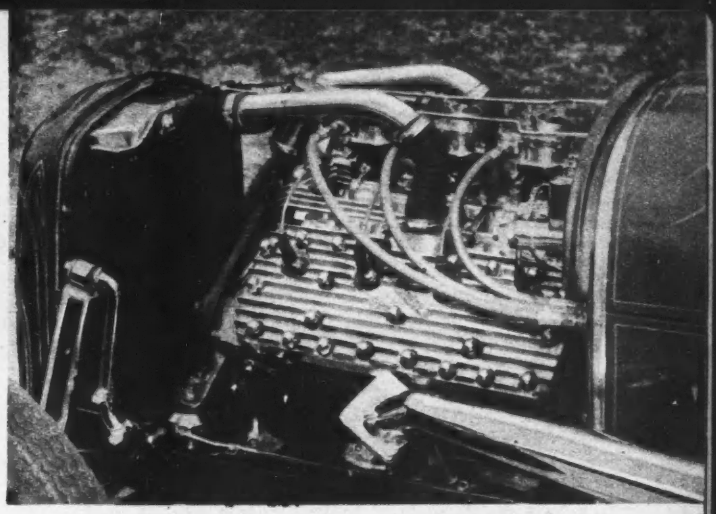
Interior of pickup received a complete roll and pleat treatment in red, white Naugahyde. Seats are from old hearse. Owner Larry Wilson, Belleville, Ill., channeled '28 roadster-pickup over the stock frame, 3½" at front, 4½" rear.

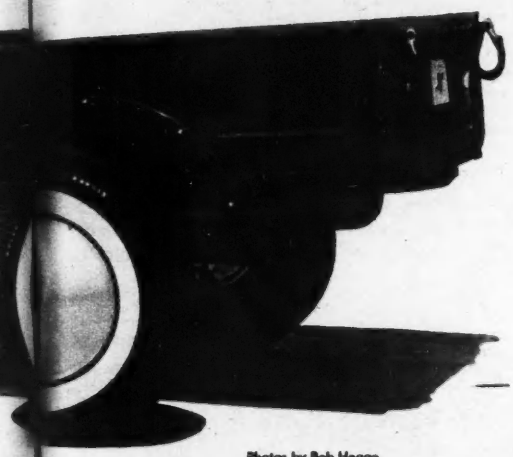




Custom box in pickup bed hides fuel tank, pleated overall. Dash panel began life as a '34 Ford, contains array of '48 Mercury instruments. Member of the Belleville Gear-Jammers, Larry is building the car for show, he formerly ran big Chrysler mill at drags. The pickup cost $1500.





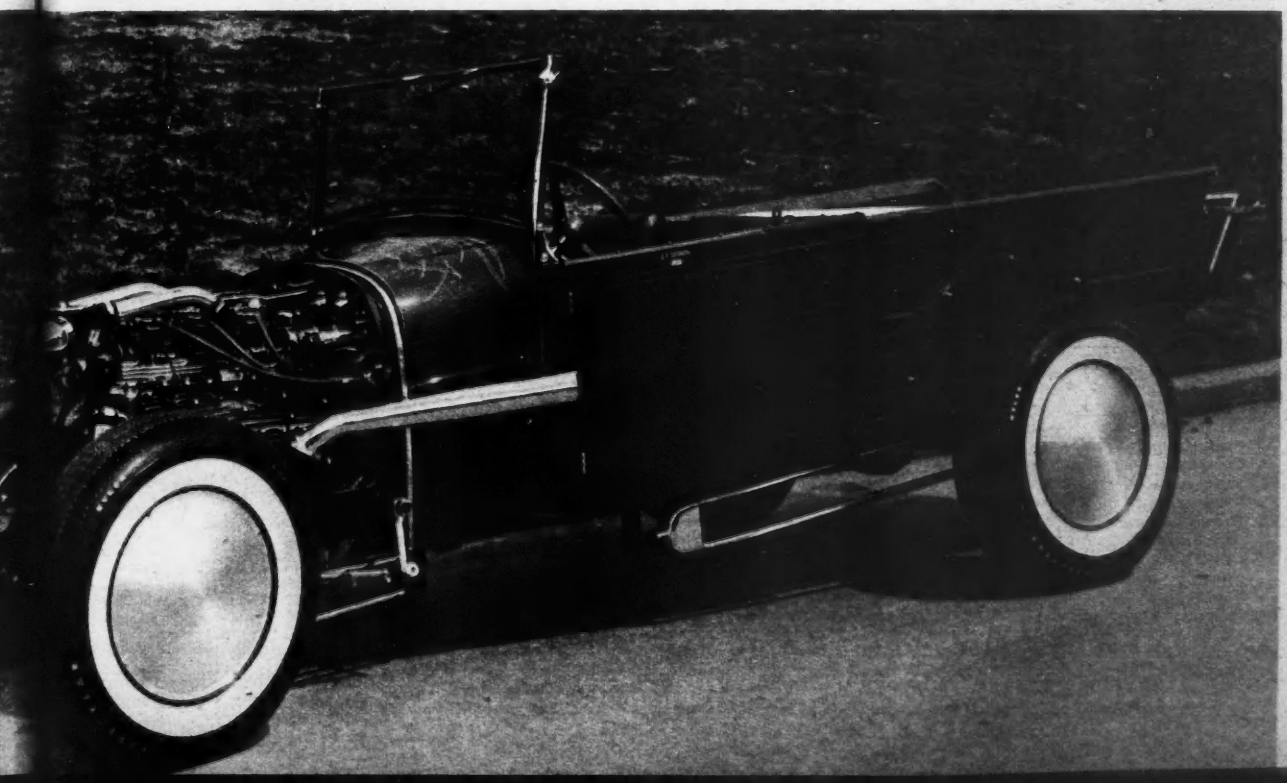


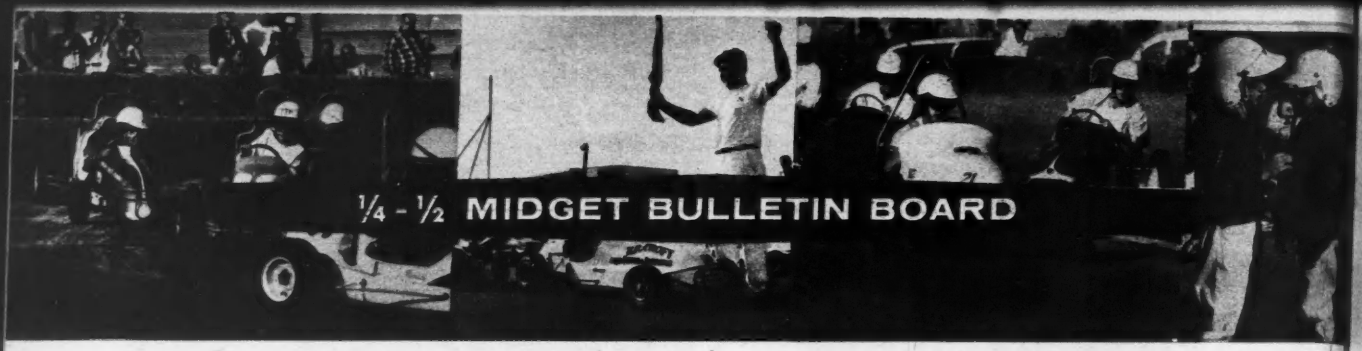
Photos by Bob Hegge

ABOVE LEFT • Front end is completely chromed, the axle dropped 2½ inches. '48 Ford hydraulics installed. Big DeSoto chrome shocks flank 5" sectioned deuce grille. Front wishbone was discarded in favor of split tube adjustables.

ABOVE • 284" Merc is '48 vintage, stroked to 4⅛ inches, altered 97 carbs mount on Edelbrock manifold, feed Isky 400 Jr. cam via big ports. Heads are 8.5:1 Edelbrock. Flywheel is 12 lb. Weber alum., mating to 11" Auburn clutch.

BELOW • Painted in a wild red lacquer, Wilson's '28 Ford roadster-pickup rides down low on 15" WW's, had humble beginning as farm truck. Striping was done by Dick Katayanagi. Underside is chromed. Brakes, clutch are hydraulic.





¼ - ½ MIDGET BULLETIN BOARD

Newly elected National QM Association Chairman, John Dupree (left) discusses nationwide unification, standardization of specs with CC Editor. Plans call for new 'out-of-the-box' class for all Natls.

QUARTER MIDGETS OF AMERICA

Yes – that may well be the title of the newly founded national quarter midget organization now under way with unified rules, specifications, and supervisory guidance for quarter midget associations from coast to coast. Actually under study since last Thanksgiving Day Nationals held at the Hacienda Hotel in famed Las Vegas, culmination came as some thirty-six quarter midget clubs and manufacturing representatives met in general assembly during the recent Arizona National whereby nominated officers took their active posts and authorized procedure for unification of rules and specifications to govern the nation's quarter midget activity. Chairman of the new national organization is John Dupree of Burbank, California. John, Prexy of the National Quarter Midgets Incorporated of San Fernando, California, shares charter honors with Co-Chairman, Harry Baker of the Tulsa Quarter Midget Association of Tulsa, Oklahoma. First on the national organization's agenda is formulation of rules and specifications governing cars, drivers, and racing procedures. Within a few weeks, suggestive regulations will be in the mail to hundreds of quarter midget clubs throughout the country. Possibly many of you have already received this literature, for those of you who have not it is suggested you contact the national group. The rules and specification literature is to be reviewed by each quarter midget association, then returned with either authorization of compliance or suggestive rectifications. Final refinement and adoption of the national specifications will take place at the first officer's board meeting scheduled for the forthcoming Las Vegas Easter weekend national races to be held in April. In addition to adopting standardized regulations, a directory board will be appointed to represent the national organization throughout many regional areas of the country. Advisory officers will also be added to the organization's staff to assist with technical and business aspects regarding growth of the new national association. Initial efforts of the organization are to standardize all quarter midget activity which falls into invitational events such as current so-called 'Nationals'. It also seeks to supervise scheduling of the invitational national or regional meets so that the events do not conflict nor prove detrimental to one another due to their planning. At the same time the association will introduce a new 'out-of-the-box' classification to be scheduled at all future invitational events. It is the aim of the organization, and plans are now underway, to stage a truly 'National' quarter midget meet early in 1961 with unlimited promotional sponsorship and scholarship benefits for participating members. This newly formed national organization and its officers have pledged their support to the nation's quarter midget sport – they in return need and expect support from each association and club throughout the United States. The future of the quarter midgets depends entirely on the strength of national unification. Timely progress of the organization will be reported on thru CAR CRAFT's monthly 'Bulletin Board' so watch for future announcements.

Direct all national association inquiries to:
Post Office Box 3142, Burbank, California.

Elected officers:

Chairman – John Dupree
National Quarter Midgets Inc.
San Fernando, California

Co-Chairman – Harry Baker
Tulsa Quarter Midget Association
Tulsa, Oklahoma

Secretary – Lynn Phillips
National Quarter Midgets Inc.
San Fernando, California

Treasury Director – Lind Davenport
Hemet Senior Quarter Midget Assn.
Covina, California

Technical Director – Marvin Webster
Northern Calif. Jr. Racing Council
Mill Valley, California

Publicity – T. A. Cox
Rocky Mountain Quarter Midget Club
Golden, Colorado

ALL-STAR CHAMPIONSHIPS

The All Stars Quarter Midget Racing Club recently announced open invitation to all quarter midget owners and drivers for their stock class Eastern States 'Black Top' Championships to be held May 29th at the All-Stars Raceway located on the Vandegrift Farm in Furlong, Pennsylvania. The championship go will be a fifty lapper with first and second place finishers from four thirty-lap heat races qualifying for the championship lineup. Further information regarding rules and specifications can be had by contacting Race Director: Joe Armstrong, 429 Madison Avenue, Hatboro, Pennsylvania.

Sam Ragland, Phoenix, and a heavy foot was combo enough for Stock senior title at this year's '59 Arizona Natls.

Phoenix drivers appeared to have a corner on the winner's circle this year; Joey Lynch, copped Jr. 'Stock' main.

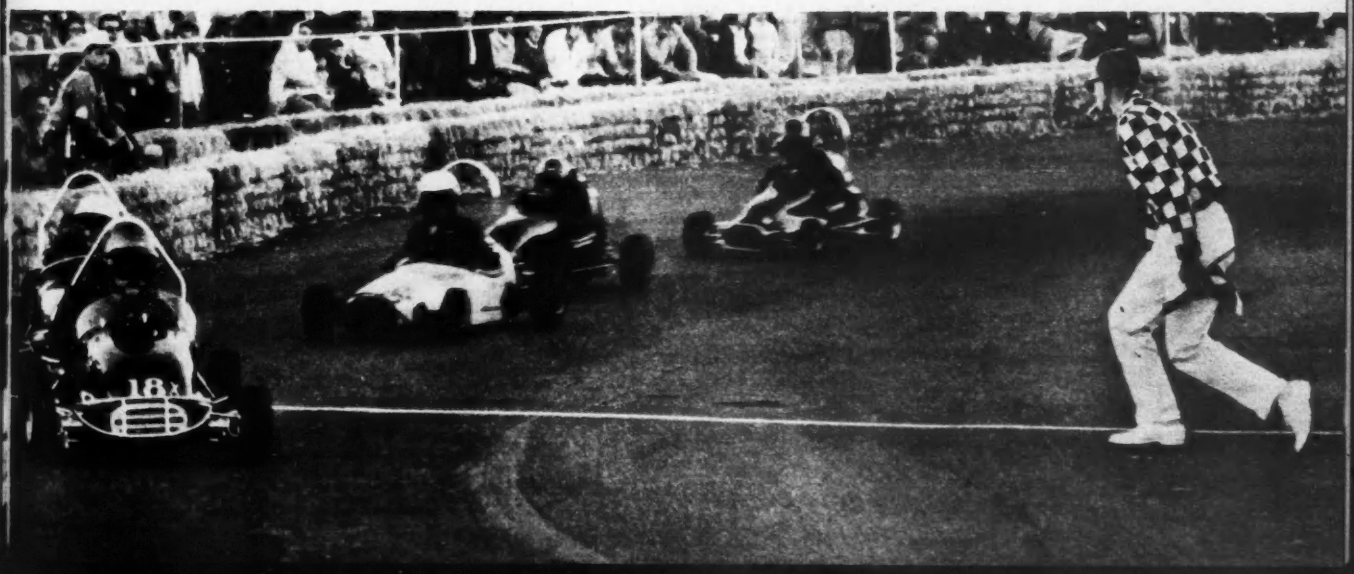
QM Champ of yesteryear, 17 year old Buster Vernard, maintains sister's car, serves as starter for hometown club.

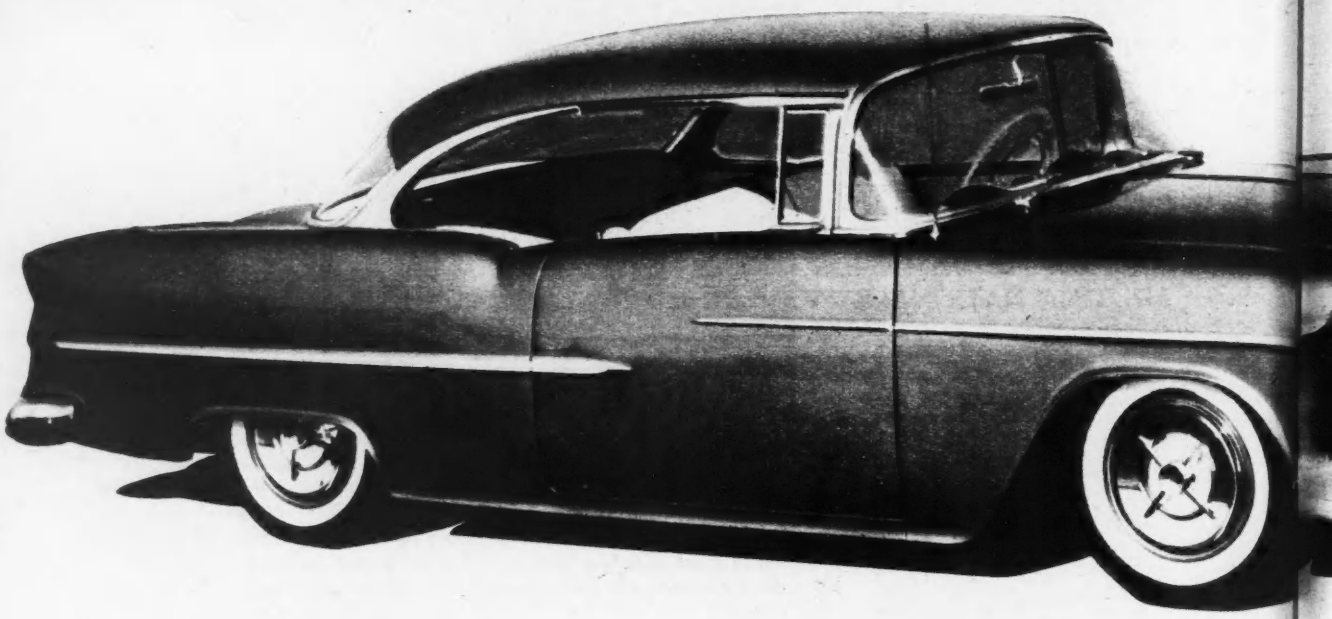
INITIATION OF NEW 'SPEEDWAY PARK' TURNS OUT TO BE A REAL VETERAN'S DAY FOR 3RD ANNUAL ARIZONA NATIONALS

Vegas champ, Rip DeCino (Calif.) experienced real heartbreaker in 'Open Gas' main; after leading entire race, mechanical failure halted car in very last corner. 2nd place Brad Dodson above (Calif.), in contention all the way, went on to checkered flag. Entries, 163, were greatly reduced by preceding rains. New Arizona race site cost some $20,000, co-sponsored by city of Glendale.

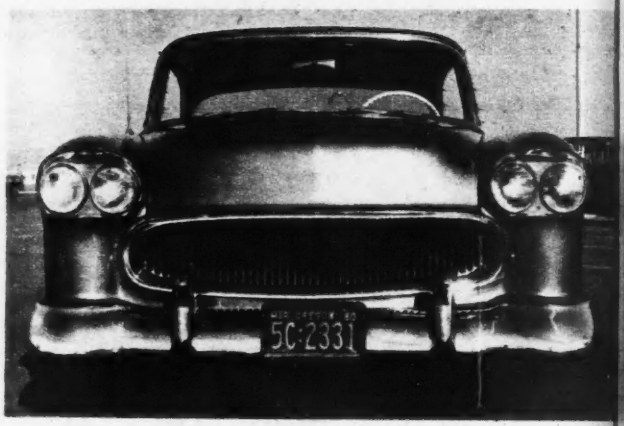
Bill Scott, Scotty Racing Equipment Spl. (left) featured a modified Viking-Craft shell over kart chassis, for dual racing role. Al Anahore (Calif.) displays his newly won award for CC camera after winning 'Modified' main in Pacemaker.

'58 champ John Kuramoto (Calif.), leads field of veteran 'Fuel' drivers over finish line as starter Sandy Sandborn brings flag down for second straight year win. Kuramoto and Kurtis are challenging pair in and around the Southern California area.





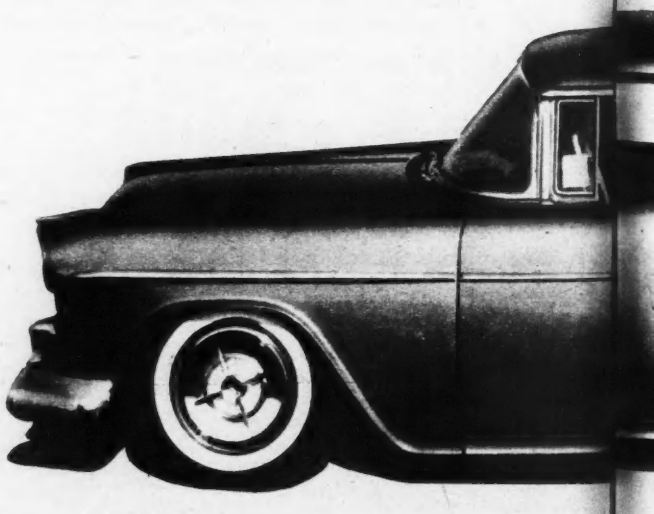
SHAPELY CHEVY

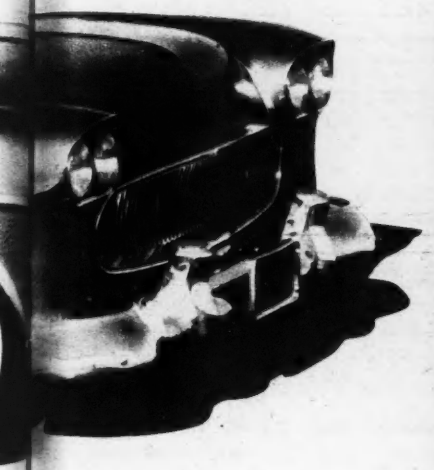


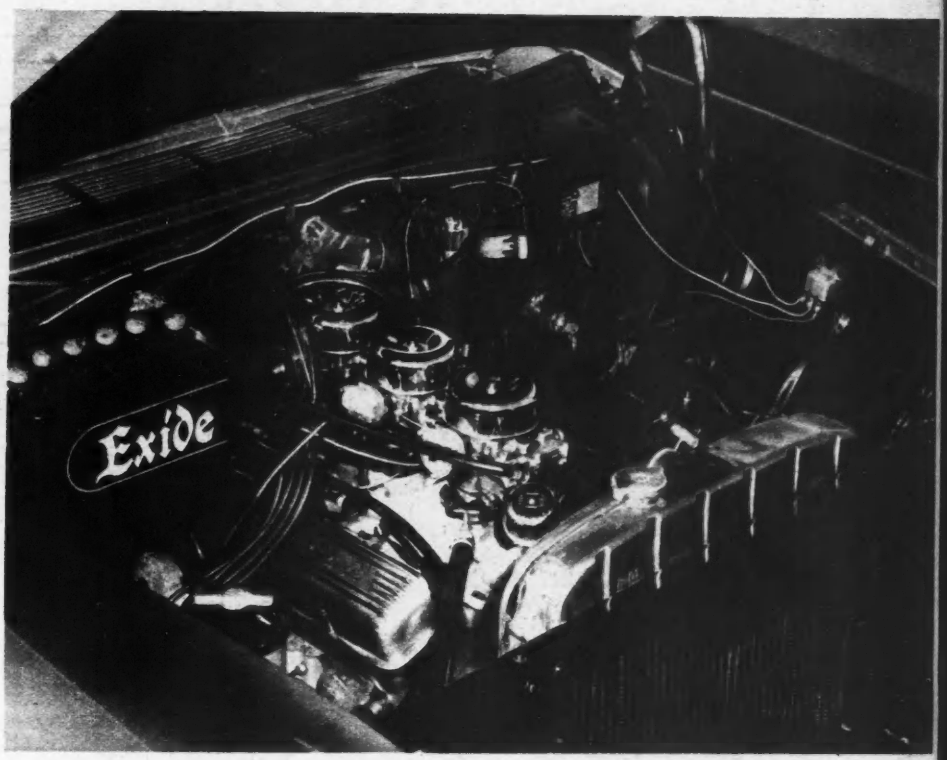
TOP • Attending one car show led Paul Thomas of Portland, Oregon, to take his clean '55 Bel Air into Gordo's Custom Corner body shop where original ideas were conceived to produce this shapely Chev. Paul assisted on metal work.

ABOVE RIGHT • '58 Studebaker quads, a change from usual, flank unique grille, pirated from a German Opel. Nosed hood, frenched gravel pan, removed park lights finish up attractive front end. Cut coils lower custom Chev 7".

RIGHT • Custom hubcaps set off whitewalls on Thomas' Chev. Rear end has been brought down by installing 6" lowering blocks. Interior was refinished by Rone Bros., Portland upholstery artists, in black and white Naugahyde, custom rugs.



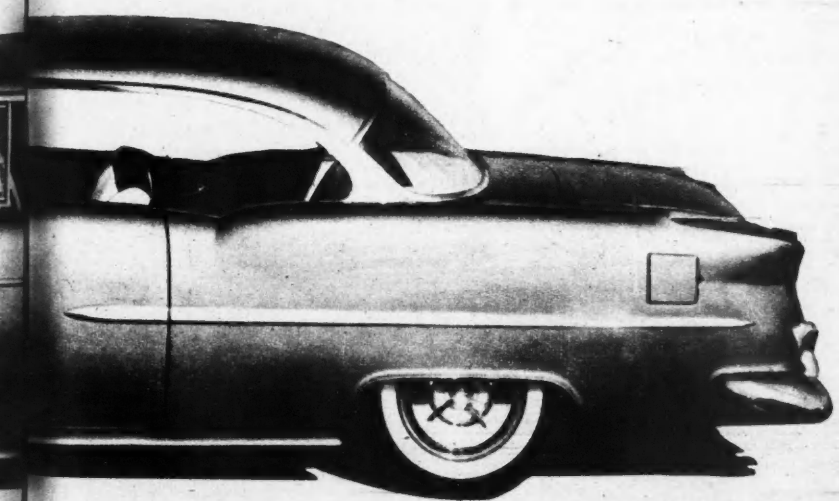




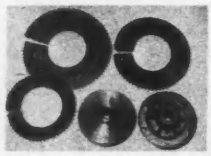
Photos by Pete Sukaloc

Engine was replaced with full house '58 Corvette running Edelbrock triple carbs for use at drags. Tachometer is functional, not just for looks. Mercer Autmotive built up the Corvette mill, installed same in Bel Air. Paul is member of the Exotics of Beaverton.

Twin '57 Merc lenses have been frenched into reworked rear fenders, scoop houses radio aerial. Custom shade also shelters rear license plate. Doors and deck lid operate electrically, side trim has been altered. This is one Exotic that is nothing but Shapely.



IT'S A SNAP!



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COBRA-CYCLE

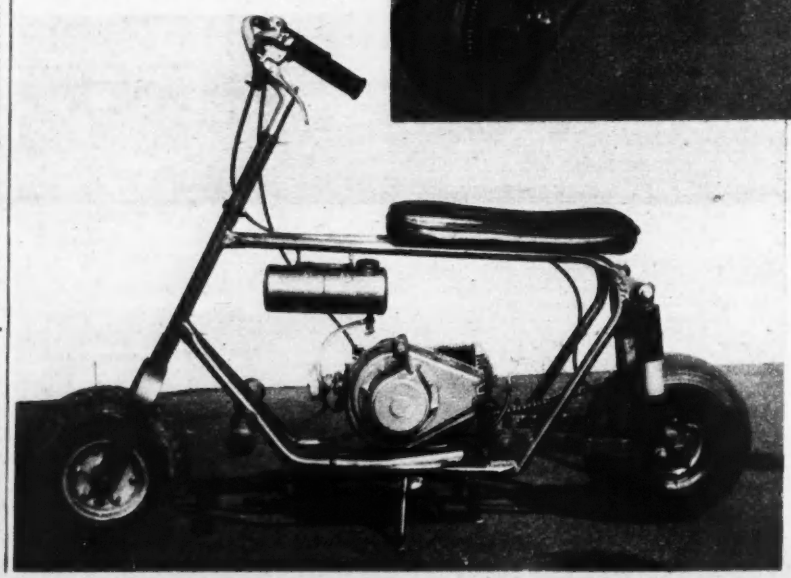
Swinging-arm mini-bike from Luther Engineering

SINCE CAR CRAFT'S recent feature on mini-bikes, Luther Engineering has brought out a radically new bike, called the Cobra Cycle, that offers a chassis design found only on the larger motorcycles. This all-new mini-bike feature is rear swinging arms, supported by husky tube shocks. The front forks are sprung by a single small coil spring, just enough to dampen road shock. The Cobra is available in any color, is brightened by some chrome. Stock tires are knobbys, other tread patterns are offered as optional though. Potent West Bend engine is enough to make one back off the throttle on tight corners.

In action, little Cobra cycle gives thrills as quick as larger counterpart, though it weighs only 67 pounds, powered by West Bend 580 2-stroke.

Double tube frame is sprung at rear by swinging arms, tube shocks. Jackshaft supports dual chains for drive. Scrambler seat, kick stand standard.

Luther Engineering's newest creation is but 50 inches long, 21 inches in height. Clutch on Cobra is automatic, release and throttle are cycle type.



HOPPING UP THE TWO-STROKE

Special heads similar to this 250cc Yamaha model are available for most two-strokes. They feature greater compression and better heat dissipation.

tuneup of a two-stroke motorcycle engine.

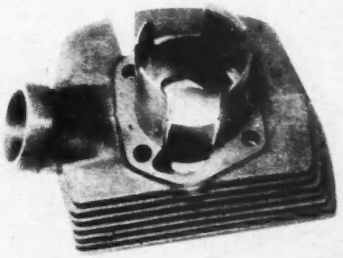
It can't be expected that these recommendations will bring every engine up to this status in horsepower output but if they are followed intelligently you may expect almost double the horsepower a stock engine will produce.

Ignition timing of your engine will vary and it is suggested that you use the manufacturer's recommendations. You should, however, experiment after you are certain that your engine RPM warrants changes. Engines of around the 3-5 cubic inch size should be in the range of .075+ to .100 BTDC. The big 15 inch engine singles will run from .140" to .170". These figures are given in thousandths and not in degrees as with the four-stroke most of you are familiar with. Take for example a Maico 15 cubic inch engine. The plug should fire when the piston is .160+ before top dead center. This is with the plug and ignition point settings as recommended by the manufacturer.

Two-strokes are really very touchy when it comes to altering the port pattern in attempts for greater power and speed and every care must be exercised in this department to be as meticulous as a Swiss-watch-maker. Unless you are a thoroughly experienced two-stroke mechanic it might be proper to consult one who is, as far as altering port timing.

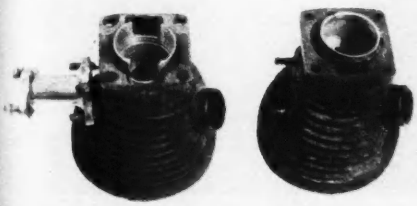
Purchase of one of any good two-stroke tuning manuals will be of invaluable assistance to those of you who would desire to tune your new cycle mill but aren't sure exactly where to begin. So much can be said about souping and tuning two-strokes, but space limitations being what they are, we'll have to be content with many of the simpler operations. Floyd Clymer has a very fine manual out entitled "Souping Two-Stroke Engines", that is tops. Through his consent many fine points in this article are from the manual.

Horsepower is not the only answer to having a winning kart though.



Yamaha barrel features large clean transfer ports for fast charging of the combustion chamber. Side of barrel is grooved for all-out attempt for area.

Gene Wise, prominent Southern California cycle builder who races for the Yamaha Company, who was so helpful in the preparation of this article, recommends the Ackermann type steering on any kart using motorcycle power, and very good brakes, plus all other approved safety features. If a kart doesn't handle well, horsepower can be dangerous, especialy when it comes in big doses.



Barrel at left is a modified Villiers, ports opened up, pistons notched. At right are stock parts. Note difference in breathing ability after alterations.

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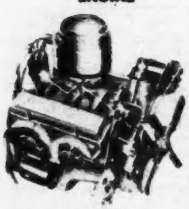

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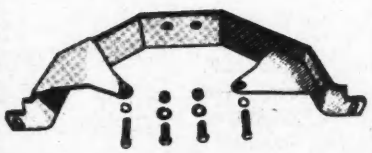

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Cad To 49-53 Ford & Merc		CA202A49	16.95
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Chry. To 41-48 Ford & Merc		CH202	13.00
Chry. To 49-53 Ford & Merc		CH202A49	16.95
Chry. To 28-34 Ford		CV202A28	16.95
Chev. To 35-40 Ford & Merc		CV202SP150	15.35
Chev. To 41-48 Ford & Merc		CV202	13.00
Chev. To 49-53 Ford & Merc		CV202A49	16.95
OHV Ford-Merc- T Bird Engines Except 332 & Up Listed Below As F-M			
F-M To 28-34 Ford		FM202A28	16.95
F-M To 35-40 Ford & Merc		FM202SP150	15.35
F-M To 41-48 Ford & Merc		FM202	13.00
F-M To 49-53 Ford & Merc		FM202A49	16.95
Olds To 28-34 Ford		OL202A28	16.95
Olds To 35-40 Ford & Merc		OL202SP150	15.35
Olds To 41-48 Fords & Merc		OL202	13.00
Olds To 49-53 Ford & Merc		OL202A49	16.95
Pontiac To 28-34 Ford		PO202A28	16.95
Pontiac To 35-40 Ford & Merc		PO202SP150	15.35
Pontiac To 41-48 Ford & Merc		PO202	13.00
Pontiac To 49-53 Ford & Merc		PO202A49	16.95
Chev To 53-57 Studebaker		CVS5357	13.00
Chev To 49-54 Chev Six		CVC4954	13.00

IMPORTANT: If Closed Drive Shaft Is Retained In 1928 To 1948 Ford Chassis — No. AD-75 Anti-Chatter Pre-Load Adjusters Are Available To Eliminate Engine Chatter.
No. AD-75 Pre-Load Adjusters — Set .84

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R315 57 up BUICK $21.95

R303 55 up CAD. $28.95

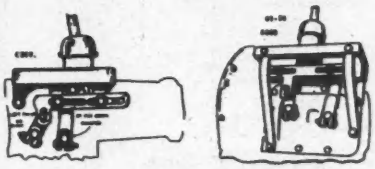
R403 51-53 CHRYS $22.95

R401 54-58 CHRYS. 53 up DODGE 52 up DESOTO 55 up PLYMOUTH (Not "B" Engine) $29.95

R603 58 up FORD PRODUCTS 332 C.I. Thru 430 C.I. $38.95

Floor Shift Conversions

Standard "H" Pattern Shifting
QUICK & SURE — ON THE FLOOR WHERE IT BELONGS ON A COMPACT TRANSMISSION



Complete Conversion Kit To Convert Column Shift On Cars listed Below to Floor Shift Operation.

HFO-0 1940-48 FORD MERC	HCH-2 For All 1940-1958 CHEV. Transmissions.
HFO-1 949-54 FORD Std & OD	HME-1 49 Early 51 MERC Std & OD
HFO-2 1955-up FORD Std & OD with side plates	HME-2 51-54 MERC Std & OD with top plates
HFO-3 1955-59 C.I. & over FORD 56-59 T-Bird 58-59 EDSEL — 49-59 LINCOLN — All Kaisers.	HME-4 57-up MERC Std & OD with top plates
	HPO-1 58-59 PONT Except Interceptor Engine

ALL ABOVE KITS EACH .$24.95

HOL-1 49-50 OLDS EACH $26.95	HCD-1 CAD - LASALLE EACH $26.95

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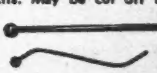
22 inch Gear Shift Extension for above floor shift kits. May be cut off if too long.



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CURVED STICK Each $3.95
CHROME BALL FOR SHIFTING STICK $1.95

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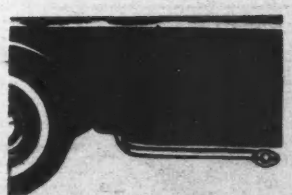
We Slashed The Price On These Equal in Quality To Sets Costing As Much As $30.00.



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CUSTOM QUERIES
George Barris
BARRIS KUSTOM SHOP

FAVORITE FORD FIX-UP

Dear George:

I am the owner of a '49 Ford, and though I know there have been many different variations on this particular model, I am writing you to help me restyle my Ford in an individual manner.

My questions are limited to only the basics, such as: the type of bumper I can use for the front. Another problem is the grille; I want something different. Thirdly, are there any quad headlight assemblies that will fit? Shifting to the rear, what taillights should I use? And finally, can you tell me a distinctive, yet seldom used side trim assembly?

—Joe Rodriquez
Houston, Texas

Since there are many variations that have been seen on the '49 Ford, I'll draw from a few of the most enhancing. If you want your overall final appearance to be 'clean', these are the modifications I suggest. First, install a '51 Ford bumper. This unit is a natural and it will take quite a bit of time and effort to adapt a better bumper. For the grille, I think you should install the '54 Pontiac center bar. This is an extremely popular switch, but again, it is a natural. If you want something else, try experimenting with mesh screen, bullets, plastics, or drawer pulls. These are the current fads, but it will take some doing to top the Pontiac unit.

Quad headlights are a lot of work. For the '49 Ford, the assembly that will probably prove the least bothersome will be the '59 Chevrolet light component kit. This will be a major alteration, but the easiest method to use is a vertical installation. You'll have to extend the fenders, mold, etc. Helpful information can be found in any of our back issues or in the series completed a few months ago in our companion magazine — Custom Cars — which dealt exclusively with quad headlight installations and adaptations.

'54 Chev taillight lenses should be substituted. Again, I suggest this because it will probably be the easiest as far as swapping components is concerned. You might also investigate the plastic replacement market. There are some real winners available now. Finally, use the '52 Buick Riviera side trim assembly. Alterations will include filling original holes in the Ford, cutting and refitting the chrome moldings. You can probably find this trim piece in your local wrecking yard.

UPDATED OLDS

Dear George:

I am hoping you will be able to answer my questions concerning a conservative restyle job on my '53 Oldsmobile '88' hardtop. I have already removed the excessive garbage on the hood and deck and I am now contemplating a new grille and a different taillight arrangement.

First, I would like a suggestion or two as to what grille I should use or if I should build a special unit. If I have to build it, I would appreciate it if you could give me an idea for one which would require only the barest amount of work. I want to leave the stock upper bar in the assembly, and retain the stock bumper. What is your opinion of a complete '57 Olds grille assembly for my '53? Will it fit?

Secondly, the taillights I want to use are the '58 Edsel units, the end sections only. My idea is to employ one each of the left and right side end sections together and mount them vertically on the fenders. I would like to french them into position. If you have any further suggestions I would like to know them. I don't, however, want to get too involved with metalwork or constructing plastic lenses.

Finally, I would like to paint the Olds a candy blue color, similar to the stock 'Arcadia Blue'. Can I get a shade the same as this and if so, what about the underbase?

—Tom Blake
Torrington, Conn.

Since you do not desire to do too much work on the grille, I would say that you had better forget about the '57 Oldsmobile grille assembly. Possibly, the mesh-type screen could be utilized, but the actual grille frame is a combination grille/bumper arrangement. If you want to use this, it would necessitate reworking the mounting brackets and trimming metal around the cavity. In fact, you might even have to add some metal to fill-in empty spots up front. If you do, however, decide to use this complete assembly, it will probably be well worth the effort as the Olds will be very striking with this face-lift. If you want something else, I would suggest you experiment. You might be able to construct a very nice grille assembly using the popular chromed bullets on a neat back-up mesh screen. Or, you might find the ideal unit with a specially made 'hardware handle' grille assembly, again using the mesh screen. There is a third alternative, too. Plastic grille enhancement is very nice, and it should be carried out in much the same way as you would build the two mentioned above. The only way that you will find the nicest appearing grille is by experimenting with the placement of these units. There are also two kits currently on the market for bullet grilles.

If this is your choice, you would probably be better off to purchase one of these kits at any well stocked auto accessory store.

I don't think you need any other suggestions for taillights. The use of the Edsel lenses is very imaginative and should really 'come on' if they are frenched to the fenders. The only other thing I can say is that if you are not entirely satisfied with these particular lenses, you might see what other units you can get that still retain this shape and design. I will say that if you do use the Edsel components, you'll have quite a job on your hands, but again, it is not too far out so you probably won't have to worry too much about the metalwork.

As for the paint color, there is no candy color which will match this hue. But you can get a nice effect and come mighty close by mixing one-half pint of the candy blue paint in with one gallon of clear lacquer. Spray a silver underbase onto the car and then spray the mixed blue over it when dry. Of course, you should experiment with the color on metal before applying. In this way, you will find the correct color shade and amount of underbase you will want to use. No matter what your choice — EXPERIMENT FIRST.

COMING EVENTS

NHRA DRAG SCHEDULES

Phoenix, Ariz. — tent. open Feb. 1st & 3rd Sun. Deer Valley Dragway.
Carlisle, Ark. — reopen April; 2nd Sun. Ark. Timing Assn.
Holtville, Calif. — 2nd Sun. Imperial Valley Timing Assn.
Inyokern, Calif. — 3rd Sun. Dust Devils Auto Club, Inc.
Madera, Calif. — reopen March; 2nd Sun. Madera Clutchers.
Palmdale, Calif. — 4th Sun. Antelope Valley Timing Assn.
San Luis Obispo, Calif. — 3rd Sun. San Luis Obispo Co. Timing Assn.
Santa Maria, Calif. — 1st Sun. Dragons, Inc.
Taft, Calif. — 3rd Sun. Taft Dragsters, Inc.
Davie, Fla. — 1st & 3rd Sun. Broward Auto Club.
Miami, Fla. — 1st & 3rd Sun. So. Florida Timing Assn.
Sebastian, Fla. — 2nd & 4th Sun. Asphalt Angels Hot Rod Club.
Venice, Fla. — 1st Sun. Vagabonds, Inc.
Opelousas, La. — reopen April; 2nd Sun. Pel State Drag Strip.
Minneapolis, Minn. — reopen Apr. 17, Ev. Sun. Twin Cities Optimist Club Timing Assn.
Henderson, Nev. — 2nd & 4th Sun. Industrial City Timing Assn.
Hobbs, N.M. — 1st Sun. Charioteers Auto Club.
Roswell, N.M. — reopen Mar. 20, 3rd Sun. Dusters Auto Club. Walker AFB.
Vineland, N.J. — reopen Apr. 24; 5/1, 8, 22, 29; Vineland Speedway.
Tulsa, Okla. — reopen Apr. 3; 1st & 3rd Sun. Tulsa Timing Assn.
Charlestown, R.I. — 4/3; 5/1; 6/6; So. New England Timing Assn.

SHOWS

Anderson, Calif. — Mar. 26-27; No. Calif. Rod & Custom Show; Shasta Roadsters, Inc.
Denver, Colo. — Apr. 8-10; Tri-State Auto Show; Coliseum; Sabers of Denver.
Clearwater, Fla. — Apr. 9-10; 3rd Rod & Custom Show; Auditorium; Blockbusters Club.
Miami, Fla. — Mar. 4-7; Autorama; Dinner Key Auditorium; Lighting Rods Road Club.
Minneapolis, Minn. — Apr. 2-3; 4th Rod & Custom Show; Natl. Guard Armory; Gopher State Timing Assn.
Syracuse, N.Y. — Apr. 30-May 1; West Jefferson St. Armory; Road Aces.
Canton, Ohio — Apr. 16, 17; Autorama; Memorial Auditorium; Floorshifters & Oilers Clubs.
Columbus, Ohio — Mar. 25-27; 3rd Autorama, 700 E. 17th Ave.; Trotters Hot Rod Club.
Fostoria, Ohio — Apr. 8-10; 4th Rod & Custom Show; Nye Implement Bldg.; Millmakers, Inc.
Mansfield, Ohio — Apr. 23-24; Coliseum; Flying Angels Club.
Lancaster, Pa. — Mar. 12-13; Autorama; Guernsey Sales Pavilion, US Rt. 30; Cam Jammers.

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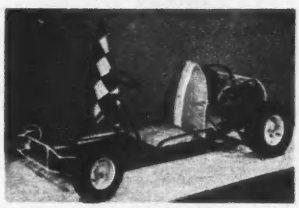

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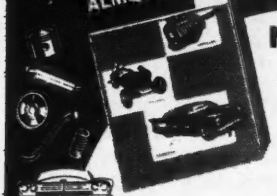

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LETTERS

CUSTOM CHEVY

Dear Sir:

Enclosed are two pictures of my 1949 Chevrolet that is painted Buick Seminole Red. The car is dropped

3 inches in the back and 4 inches in the front. Long lakes, Lancer caps, twin spots, '53 Chevy grille, all unnecessary chrome removed, and '50 Pontiac taillight rims with '56 Chevy lenses are the main exterior features. The upholstery is black and white Naugahyde.

I did all the work on the car except the upholstery. I would be very proud to see my car in your magazine for it is tops.

– George Jezek, Jr.
West, Texas

Many thanks for the compliments, George. We'll turn right around and give them back to you for your clean Chevy.– Ed.

MODEL MANIA

Dear Sir:

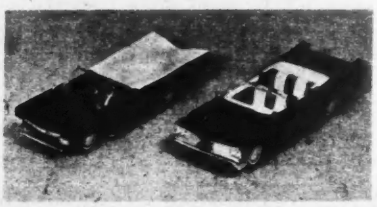
Just picked up the new issue of Car Craft. I read your story on the Custom Car kits now being offered to car hounds with small incomes. Enclosed are two models put out by AMT, a Chevy and a Pontiac. With each model there is a list of custom features that have been added. I think you'll agree that the Chevy is unique.

I thought you might want to show your readers what a little time and effort can do for one of these fine model kits.

Keep up the good work with your magazine. I like the new size, too, it's easier to keep track of.

PONTIAC:

Lowered 2½" scale in front, deck shaved, hood shaved and v-scoop removed, side trim removed, door handles removed, Moon discs, dummy spots, ripple lake plugs, chrome bullets set in taillights, floorshift, swing pedals, "show wheel" (cut in half), tach, custom painted interior, custom Imperial Burgundy exterior paint. (Building time: 2 weeks)



CHEVY:

Lowered 2½" scale in front, hood shaved, side and fender trim removed, air-scoops in front over grille, dummy spots, Moon discs, door handles removed, full-length lake plugs, tach, floorbox, swing pedals, push bar front bumper, windshield frame removed, rear half of car cut out in shape of El Camino, truck bed added (cardboard), sewn tonneau cover (Naugahyde) follows shape of fenders, red and black interior, black enamel exterior. (Building time: 1 month)

– Bob Matherly
San Leandro, Calif.

Very nice customs, Bob. We're sure that the new custom kits have opened a new field for custom car enthusiasts.– Ed.

ONLY CUSTOM IN TOWN

Dear Sir:

Enclosed are some pictures of my brother's '50 Ford which he customized. It has been sectioned 5" and

has 2" lowering blocks and one-and-a-half coils cut out of the front springs. It has a '55 Thunderbird en-

gine with a floor shift and the overdrive kick down switch on the shift. The paint job is Ivory White with Toreador Red scallops. The interior is in red tweed and black leatherette.

It is the only custom in town which has only about six hundred people in it. Thank you and keep up the good work on your new size magazine.

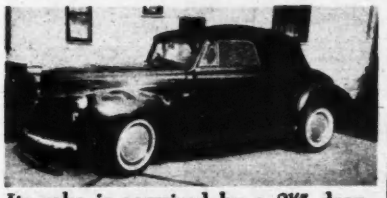
— Jack Eggum
Richey, Montana

WARMED-UP FORTY

Dear Sir:

I've been reading Car Craft magazine for about 3 yrs. and I enjoy it very much. I would like to see my '40 Ford convertible in your book.

I have done all the work myself. It has 18 coats of metallic green lacquer with a wild flame job up front.



Its rake is acquired by a 2½" dropped beam and 8:20's in the rear.

The engine is stock except for a Isky ¾ race cam, a 3⅜ bore with a 4" stroke, and a 3 pot manifold with a truck fuel pump supplying the go. The heads are Weiand 8.5 to 1, headers, dual exhausts, a port and relieve job also aids breathing.

The transmission and rear end are '37 Lincoln with 15" wheels and Moon discs. Keep up the good mag.

—Jim Anthony
Buffalo 20, N.Y.

"... JUST A WEE BIT BIG"

Dear Sir:

In your October '59 issue you stated that the 3 Window Favorite, George Smaldone's coupe, is bored to 3 15/16". Isn't that just a *wee* bit big?

The new Car Craft is great; keep up the good work.

— Max Roark,
Knoxville, Tenn.

Perhaps so, but that's what the Tech Sheet says. Sorta big, huh? Besides, those "1's" are always getting in the way.— Ed.

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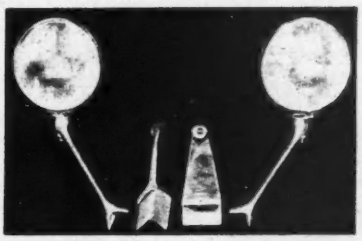

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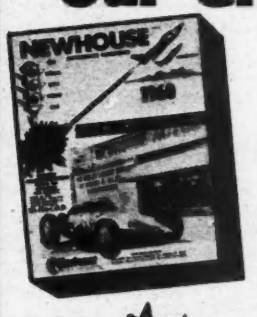

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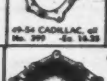

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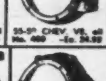

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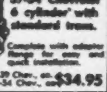

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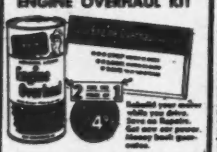

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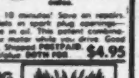

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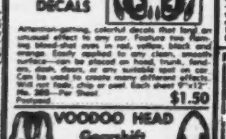

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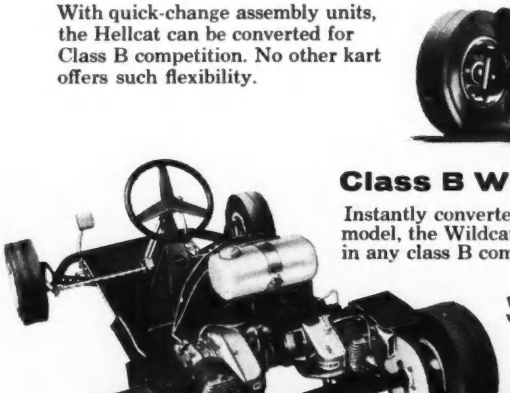

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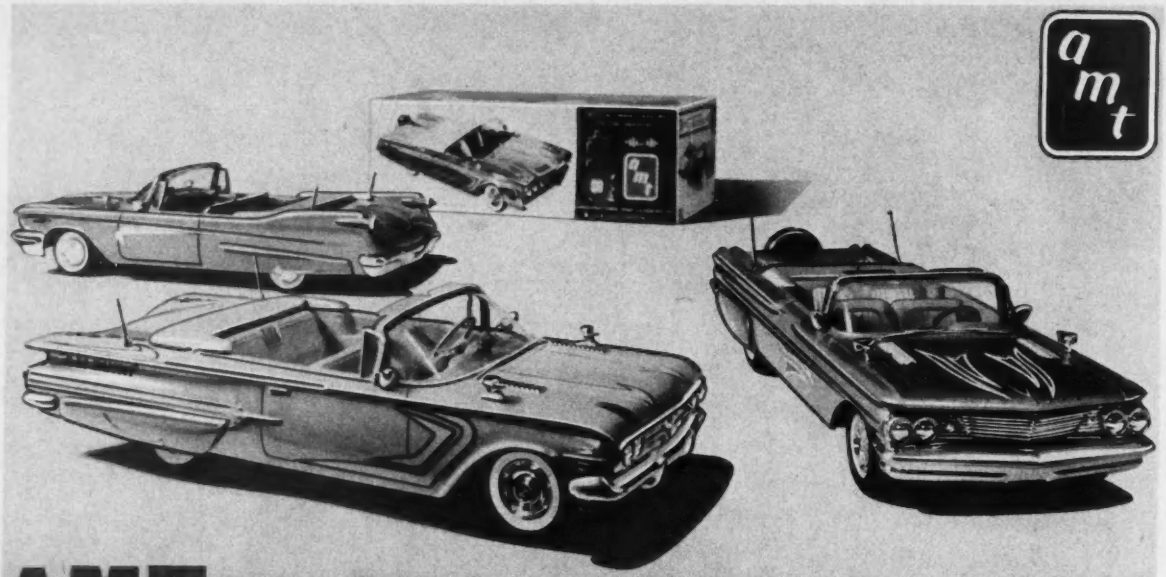

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